



FRIDAY, JULY 18.

## Contributions.

## Foreign Fire-box Steel.

Canadian Pacific Railway Company,  
MONTREAL, July 12, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I notice in the report of the Master Mechanics' Convention held at Long Branch, June 17 to June 19, that it was accepted as a fact that English firms have been unable to manufacture steel suitable for locomotive fire-boxes and boilers, and that they had to go back to the use of copper. I desire to take an early opportunity of correcting that impression.

From 1877 to 1883 I was Manager of the Grand Trunk Railway shops in Montreal. For the first two years or so we used "Bay State," "Ohio," and "Park Brothers'" steel, with thoroughly satisfactory results. In 1879, on account of high prices, duties, etc., we turned our attention to British-made steel, and tried several English makers. Of these I found the fire-box steel made by Landore Siemens, "S. S." quality, thoroughly satisfactory in every way, and there are many fire-boxes and boilers running on the Grand Trunk Railway to-day made of this steel which have given little or no trouble.

Later on we tried Scotch steel. The sheet plates manufactured by the Beardmore Co. and the Steel Co. of Scotland have proved satisfactory in every way so far. The Grand Trunk Co. has been using these manufacturers' plates for over four years, and I believe are using them to-day (and see no reason to discontinue their use). Mr. Wallis, Mechanical Superintendent of the Grand Trunk Railway, will, I am sure (if you wish it), verify this statement.

As far as our own practice goes on the Canadian Pacific Railway, we are using Scotch steels entirely, with satisfactory results; and as far as the question of cost goes, I may state that we get this Scotch steel laid down at our works in Montreal at three cents per pound.

I am well aware of the excellence of the steels manufactured in the States; at the same time I should like to correct the impression that other countries are not able to manufacture steel fit for locomotive boilers.

I have also used fire-box steel manufactured by Krupp, which worked well, but has not been long enough in use for me to say much about it.

FRANCIS R. F. BROWN,  
Mechanical Superintendent.

## The Victims of Car-Coupling.

SHARPSVILLE, Mercer Co., Pa., June 23, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Since the publication in the *Gazette* of April 25 of my article on "Car-Coupling Reform," I have received from the Commissioner of Railroads and Telegraphs of Ohio a copy of the report of that officer for the year ending June 30, 1882.

The Commissioner gives details of the result of a collection of the statistics of the railroads of Ohio for 1880, with those of the railroads of the entire country, given in the census returns of the general government for that year; and finds that, while the average gross earnings per mile of road were 9 per cent. greater, the average net earnings per mile 12 per cent. greater, and the average receipts for carrying the mails 25 per cent. greater in Ohio than in the United States considered collectively, the capital stock per mile of road, the debt per mile, the cost per mile of road and equipment, the passenger earnings per mile and cost of passenger-service, the net income on capital stock and debt, and the per cent. of operating expenses to gross earnings in Ohio show averages very closely approximate to those of the country at large, and asserts the existence of a like coincidence in minor details. He concludes that the averages of Ohio may be taken as quite closely expressing the averages of the United States as a whole; and this, too, in the matter of casualties, etc., as well as in those items before specified.

I have, therefore, used the statistics of accidents to railroad employes in Ohio, given in said report, as a means for testing the accuracy of the estimates, based on analyses of other sources of information, contained in my letter above-named, and find that the figures of the Ohio report afford confirmation of my estimates as to the ratio of the number of trainmen killed and injured to the whole number of railroad employes killed and injured in the United States, annually; and as to the ratio of the number of railroad employes killed in the operation of coupling cars to the whole number of such employes killed.

I said: "Of the killed and wounded about 75 per cent. are trainmen." According to tabulated statements in the Ohio report in question the aggregate number of fatal and other injuries to railroad employes in Ohio, in the year ending June 30, 1882, was 746.

In 87 per cent. of the cases of injury the cause of injury is given; but 78 injuries are grouped as due to "miscellaneous causes."

In the cases in which the cause of injury is specified, the context is generally a sufficient indication of the occupation of the employe.

Assuming that in 75 per cent. of the cases in which the in-

juries are referred to "miscellaneous causes," and in 75 per cent. of the cases in which the cause named is one affecting trainmen as fully as other employes, the sufferers have been trainmen, the trainmen killed and injured, as aforesaid, were 563 in number, and 75.3 per cent. of the aggregate number of employes killed and injured were of the class in question.

According to the Ohio report, the employes killed in the year ending June 30, 1882, were 151 in number; of these, 19, or 12½ per cent. of all employes killed, met death while coupling cars. I said: "about 10 per cent. of the deaths \* \* \* are the result of accidents met in the operation of coupling and uncoupling cars."

Of the 563 Ohio trainmen injured, as above stated, 328 were, according to the report, injured "in coupling cars, or caught between cars and engine." These 328 represent 55 per cent. of the whole number (595) of employes injured not fatally.

I said: "about 40 per cent. of the serious injuries" are the result of coupling accidents. I had in mind a distinction between an injury resulting in permanent disablement, as by the loss of an arm or other member, and one causing only temporary disability; and probably as much as 15 per cent. of coupling accidents reported result in nothing worse than severe bruises or cuts.

The casualties to railroad employes in Ohio in the year named were largely in excess of those reported for any preceding year. The killed in 1882 (151) were 40 more than reported for 1881, and 65 more than in 1880; and the injured (595) were 155 more than reported in 1881, and 354 more than in 1880.

The increase in figures is probably in a measure referable to the making of more comprehensive and exact returns in the later years. Still, while the aggregate ton-mileage of Ohio for the year ending June 30, 1882, was only about 8 per cent. greater than in 1881, the freight train mileage was about 23 per cent. in excess of that of 1881 and the mileage of "mixed" trains and construction trains exceeded that of 1881 by 63 per cent. and 65 per cent. respectively. Train mileage of all classes combined was 30 per cent. in excess of that of 1881, so that the per cent. of increase of casualties to employes shown for 1882 was only slightly in excess of the per cent. of increase of train service for 1882.

In this connection I may properly note the fact that since the publication of the "Coupler Reform" letter before mentioned, with its suggestion for a convention of the railroad commissioners of the country, looking to the appointment by such convention of a board of experts to be charged with the duty of "examining and reporting" on the car-coupler question, the Legislature of Massachusetts has passed a bill (approved May 8), authorizing the Massachusetts Board of Railroad Commissioners to make examinations and tests to the end that said board may be enabled to decide whether or not any, and if any, what, coupling device is of merit sufficient to warrant the Board in prescribing the placing of it on all freight cars owned by Massachusetts railroad companies.

The Massachusetts Board has named Sept. 25, 1884, as the day on which it will give a hearing to "all parties desiring to set forth the merits of any safety coupler, and also any criticisms thereof by experts, and they will witness tests of such devices." Their circular expresses the desire of the Board to have presented records of the working of safety couplers in use in actual traffic.

I have reason for believing that this hearing will be actually, if not in name, a "convention of the Railroad Commissioners of the country," as well as of representatives of railroad companies, engineers and others. The outcome of it will, I believe, be good.

J. M. GOODWIN.

## Notes on German Railroad Practice.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The passenger traffic on German railways is divided among three classes of trains—railway, express and "courier."

The former run at a speed of 15 to 20 miles an hour, including stops, the expresses make from 20 to 25 miles, and the courier trains from 25 to 35 miles. The latter speed is not attained on long stretches where there are important stops, but is found between large cities where the intermediate stops are rare and unimportant.

With these speeds it is naturally easy to run on time, and no serious irregularity in this respect has ever occurred during my traveling in Germany.

I think it may be said that there is no practical difference in the running time of ordinary and express trains as a rule, the difference in actual time being due to fewer stops.

Extra rates of fare are generally charged on express and courier trains. The latter, as a rule, the former sometimes, have only first and second-class accommodation, so that persons who would if possible travel third-class—including the vast majority of middle-class travelers—are obliged to pay nearly double when they travel over 17 miles per hour.

The third-class accommodation in Germany is not so good as that in England, whereas the second-class is at least as good, or better. The second class is so nearly equal to first that a still smaller number travel "first" than in England. In the latter country, in fact, the effort has been to do away with the second-class travel, while in Germany that branch is apparently particularly favored by the managements. In Germany there is a fourth-class, used almost exclusively by peasants and the poorer laboring class generally, and inferior in accommodation to our emigrant cars.

The rates in North Germany are as follows, in cents, per mile:

Province.	First-class.		Second-class.		Third class.
	Express.	Ordinary.	Express.	Ordinary.	
Prussia.....	4.37	3.50	3.31	2.65	1.75
Saxony.....	4.17	3.33	3.13	2.50	1.67
Bavaria.....	3.80	3.33	2.68	2.22	1.42

Having regard to the fact that the vast majority of the fast travel must be made second class, it will be seen that 3 cents per mile is the average rate comparable with the ordinary accommodation afforded by American railroads.

Return tickets, good for a week, are generally to be had at considerably reduced rates. Water-closets are now often found on first and second-class carriages, and dining cars are run on courier trains on various lines.

In the matter of locomotives, the ordinary type at present for passenger service is a four-coupled engine with single pair of leading wheels, inside eccentric gear, and cylinders overhanging, entirely in front of the front axle. There are very few inside cylinders used on North German railways. Outside valve gear of various kinds seems to be gaining ground. Six-coupled engines without leading wheels are the favorite freight engines, and on mountain sections eight-coupled machines.

I noticed on the Saal railroad, west of Saxony, a peculiar type of machine, of which the leading features are carriage of engine entirely on four-coupled drivers; outside valve gear, and the tank carried down between the tender wheels. The tender and engine are united, in addition to the regular coupling, by tolerably close-fitting shoot bolts, one on each side, with the intention presumably of using the tender to prevent rocking of the engine on its four-coupled wheels.

The addition to the tank between the wheels struck me as a possibly practical novelty in our own practice; the centre of gravity being carried thereby very low and considerable water space gained.

Driving-wheel tires are generally secured with set screws in addition to being shrunk on, but the spring-ring fastening is also used, particularly in Saxony. The locomotive round-houses are very similar to our own, both in general and in detail. In many places they have the smoke-jacks carried into a single flue connected with a tall chimney, to avoid the smoke nuisance.

The usual shop arrangement in North Germany is that of parallel rectangular buildings with transverse tracks and transfer tables, either between the buildings or through their centres. Little stress is laid on consolidating the steam power of these shops, and, if of considerable size, they generally have several separate engines and corresponding boiler banks and chimneys. Where steam-heating is used it is generally done by drums instead of small pipes, and the main steam-pipes are carried rather larger than ours in proportion.

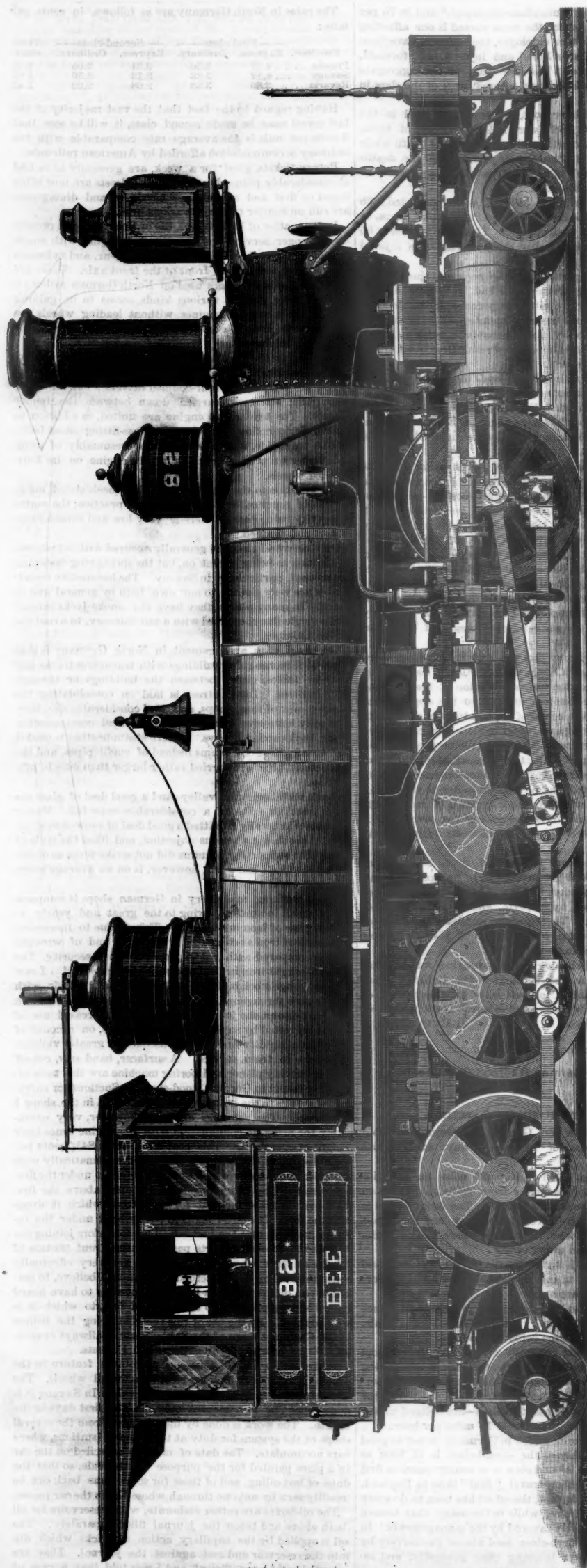
Roofs with horizontal valleys and a good deal of glass are much used, in spite of a considerable snow-fall. Master mechanics generally admitted a good deal of snow-shoveling, but did not find it a serious objection, and liked the style of roof. The supporting columns did not strike them as objectionable. Their snow-fall, however, is on an average much less than ours.

Wood-working machinery in German shops is comparatively small in amount, owing to the great and yearly increasing use of iron in all parts. This is due to increasing cheapness of iron as compared with wood, and of wrought iron as compared with cast in proportion to its security. The use of wrought iron instead of cast is very extended. I saw narrow-gauge stock building at Chemnitz and Leipzig with iron frames throughout, which had absolutely no cast iron in any part except the journal boxes. The increased use of iron is regretted by some master mechanics, on account of the greater rigidity and of the consequently greater violence of shocks in train service. A surfacer, band saw, cut-off saw, or driving planer and boring machine are the tools ordinarily found in German wood-shops. Sections for carrying shavings to the boiler-room are not used in the shops I have seen. The shavings are used, however, very extensively for firing, in combination with about nine times their weight of coal slack. This coal slack costs 84½ cents per ton delivered at the railroad. It is fired automatically with a hopper and a screw which pushes the fuel in under the fire. It is also fired by being run from a hopper above the fire-door over a grate inclined forward, from which it drops into the fire. The latter is raked partly back under the inclined grate, so that the fuel is well heated before joining the fire, and its smoke products pass over the front portion of the fire on their way to the flues and are very effectually consumed. This firing method is common, I believe, to several styles of fire-box, but I do not remember to have heard before of its application to this kind of fuel, to which it is well adapted. By the use of this fuel and firing the boilers of the Chemnitz shops of the Saxon State Railways evaporate 100 lbs. of water at an expense of 1.11 cents.

Wheel lathes are, of course, a prominent feature in the shops of railways which use steel tires for all wheels. The German stock is oiled at regular intervals. In Saxony it is done once in two months only, in the first days in the month. The work is done by men detailed from the several shops of the system for duty at the principal stations, where cars accumulate. The date of oiling is stenciled on the car in a place painted for the purpose on the side, so that the date of last oiling, and of those for some time back can be readily seen by anyone through whose hands the car passes.

The oil-boxes are rather elaborate, with reservoirs for oil both above and below the journal filled separately. The oil is applied by the capillary action of wicks which dip into the reservoir and rest against the journal. They are reported to be very efficient, and I was told that a case of





IMPROVED TYPE OF LOCOMOTIVE, DESIGNED BY MR. ALEX. MITCHELL, LEHIGH VALLEY RAILROAD.

hot box is very rare since the introduction of the double reservoir. The master mechanics reported them as leaving nothing to be desired except in the matter of oil flying out of the box ends, which, as with us, is a great source of waste.

Cast-iron brake shoes are generally used for all classes of stock, and at Chemnitz they report very favorable results from the use of 25 per cent. scrap steel in their casting metal. Of the appliances in the German railway shops, the Ehrhardt locomotive scales and a little arrangement for cleaning boiler tubes were new to me and appeared worthy of adoption. The Ehrhardt scales are compound steelyards—not too heavy for a couple of men to move about—one set of which is placed under each wheel of a locomotive, so that the exact weight on each wheel is given by the several scales when the whole machine is suspended. They cost \$22 apiece, or \$656 for an 8-wheeled machine, and although some complaint is made of variations in weight indication in the hands of inexperienced users, they are generally used in Prussia and Saxony at least, and are of course very handy from their capability of use in any place where the locomotive happens to be standing. The lifting jaw of the steelyard is placed under the part of the wheel-tread which projects over the rail.

The tube-cleaning machine consists simply of two fixed rolls, side by side, but not quite touching, and run by one belt in the same direction. In the hollow between them lies the tube to be cleaned, its axis, of course, parallel with theirs. The tube is pressed against them by a third roll mounted loose on a lever, by means of which the operator makes it bear on the tube with considerable force. As all these rolls have their surfaces cut into grooves, the sharp intermediate ridges coming into contact with the scale remove it very neatly. As the grooves on the rolls run in a slightly spiral direction, the tube is gradually drawn along. An attachment at the end of the bench enables the tube, when cleaned, to be clamped into a pulley, by which it is turned in contact with a cutting tool, which removes the damaged end. Although this little machine requires a man to tend it, its work is so much neater and quicker, and it requires so much less power to run it than the cylinder machine, that the best evidence I could get was decidedly in its favor, though some men think it less economical than the cylinder where many tubes are to be cleaned. It is, of course, much less noisy.

The present practice in Germany as to frogs seems to be somewhat divided between steel rail and chilled iron. The favorite practice seems to be steel-rail frogs for main line and chilled iron for side-tracks.

Recent careful experiments on the Saxon State Railways show a resistance of "bogies" stock on curves only two-thirds that of vehicles with stiff wheel-base, with radii as large even as 1,400 ft.

While in Chemnitz I visited Hartmann's large establishment, which employs 3,500 men, and makes all kinds of tools and a great variety of machines, such as stationary engines and boilers, locomotives, water-wheels, looms, etc. They have a planer which is approximately 50 ft. x 18 ft. in plan, with a pit about 10 ft. deep for facing up their large planer beds. Their requirements for wrought-iron to be used in their works are 44,000 lbs. per square inch of original section for tensile rupture, with 28 per cent. elongation before rupture ensues. They have a small and rather primitive testing machine, which is kept in constant use, however.

In conclusion, I would note that the smaller amount of capital available and smaller business to be handled have made German engineers less extravagant than their English brethren; and though German railway structures are, as a rule, on a more permanent scale than our own, there is very little unnecessary expenditure. Some of our managers would find superfluous the great variety of signboards and distance-stones used on German railways to designate curves, grades and distances, but they have, of course, their uses, both regular and occasional, and are, after all, not very expensive. One little point in this connection amused me. The grades are designated by one to the distance in which that rise takes place; under this system a level is given as one to infinity ("1 in  $\infty$ ," as shown on the signboards).

Some little red tape is necessary in getting admission to the railway shops, but no such exclusiveness is shown as at Krupp's, which is still, I believe, absolutely closed to strangers. I am indebted to the gentlemen in charge of the different shops I visited, for the most ample courtesy in personal conduct and answers to inquiries.

NORWICH, June 14, 1884.

W. HOWARD WHITE.

#### The Proposed Uniform Train Signals.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In reply to Mr. W. F. Allen's circular of January 14, asking for criticisms on the proposed "Uniform Train Signals," I desire to submit the following:

Uniform signals are valuable only for two purposes. One to prevent the possibility of accidents at crossings or junctions with other roads, the other, that men changing from one road to another may not be confused by difference in signals and cause accidents by giving the wrong signals when doing work or flagging trains. So far as the first purpose is concerned, the proposed Code is perhaps sufficient. The Code, however, will not fill the second requirement, as it is not sufficiently comprehensive to meet the needs of the men in handling long freight trains doing work along the road or in yards. Any railroad official can satisfy himself of this if he will go out among the "boys" and see how



many motions they make doing their work. There are signals to "go ahead," and signals "to back up," but in doing work, signals to "slack ahead" and "slack back" short distances (which shall be readily understood) are just as necessary, but are not mentioned. Men on all roads have systems of these work signals, which ought to be uniform if a uniform Code is desirable.

Engines do not always run head (or pilot) first, but are often run tender foremost, or backing up. In case an engine is backing and hauling a train, how will the Code Signal apply? Will you give a signal to back up for the train to go ahead and the go-ahead signal to back the train, "or how"? The practice is not uniform on all roads, and if a uniform code is adopted this difference should be adjusted, or one road will be using "go ahead" signals and backing signals referring to the position of the engine, and another referring only to the train. So far as the observation of the writer goes, in doing work, the general practice is to give signals referring to the position of the engine.

In running on the road some give signals referring to the position of the engine and some referring to the desired movement of the train. It will readily be seen that, unless uniformity of practice is secured, the differences mentioned may be very confusing to an engineer.

If men cannot be taught the difference between day and night signals without danger of creating confusion in their minds and confusing signals, they cannot be taught to be safe men anywhere.

Men must be taught and told, and their capacity to learn makes them valuable or the contrary to a railroad company, so that the objection to a difference between day and night signals is not very strong.

For a long freight train it seems to the writer there is a better go-ahead daylight signal than the up-and-down motion of the Code. It is very generally used on many of the roads. It is made by bringing the hands in front of and opposite the face, or above the head and swinging them out the full length of the arms as in swimming, or swinging the hands (from the position mentioned) outward and downward. The latter manner of giving the signal is equivalent to an up-and-down motion with both hands, but has added to it the wide swing of the arms which is especially noticeable. A modification of this signal is used to notify an engineer to slack ahead, viz.: bringing up the hands as mentioned, and parting the hands but a short distance and repeating the parting motion several times. In switching an up-and-down motion of the hand is much used on some roads to signal engineer to stop. When switching any motion of a lamp in a circle is used to signal engineers to back up. A lamp held out at arm's length stationary is used as a signal to engineers to slow up and come back quietly and steadily. Such signals, or some other signals meaning the same thing, are necessary to expedite work and secure safety. This cannot be done with the same signal for backing or going ahead short and long distances. Signals to enable an engineer to do his work promptly and safely must tell him whether to slack ahead a short distance or back up a short distance; whether to back his cars in on siding coupled to his engine; or, as the men say, "give them a kick," so that they may run in on siding some distance.

A man flagging an approaching train may know that the distance is short to enable the train to stop before reaching the danger and a consequent smash-up. Under such circumstances a signal to an approaching engineer to reverse his engine would be in order and avoid the "smash up." This can be given by making with flag, lamp, or hand the signal to stop followed at once by the signal to back.

It would seem from this that more signals are required than are mentioned in the Code. It is very likely that a person better informed than the writer could think of more signals than mentioned in this paper. Conductor and brakemen need and use signals to save time, say when a train is broken and a new link or pin is needed to couple up again. The man at the point where train has parted cannot call loud enough to be heard, and it will take a good deal of time to go 30 or 40 car lengths and return with the needed link or pin, or both. He then resorts to signs. He holds up his hands a short distance apart for a link, and holds out his left hand with the right in position of dropping a pin in a draw-head, indicating that a pin is needed.

Would it not be advisable to add to bell-cord signals, that a single tap of the bell, when a train is running, indicates that the train has parted and engineers must ascertain what it means, and if a train has parted govern himself accordingly?

Whistle signals mentioned are not objectionable, except it seems to the writer that three short blasts for backing are not sufficient in the case of a long freight train, more especially if there are two sections and both must back. The first cannot back until the second has started. As a rule, I think that you will find in handling long freight trains that the first engineer whistles three long blasts and does not start back until the second answers him with three long blasts, indicating that he understands and will back also. Backing of first sections cannot be done safely without some understanding with the second, either by whistle or in some other way.

Referring to stationary or fixed signals, it seems the effort has been to make "Red" mean "danger-stop;" or, as reported in the *Railroad Gazette*, April 18, "provided it is fully understood that red under all circumstances means 'Stop,' and must not be disregarded." The Committee evidently does not consider red so absolute as the statements mentioned above would indicate, because they say "each of the four first mentioned should be indicated by a signal of shape or color entirely distinct" from all the others

and as colors readily distinguishable at a distance they should always when practicable be reinforced by shape or position, to which may be added the manner in which the signals are displayed or handled. The effort to make "red" an absolute stop-signal which must not be disregarded is good theory, but is not practical until you can manage to prevent people from putting red lights in halls, in transoms over doors; or to prevent people from wearing red clothing, which often flutters on a clothes-line near the track. Until this is done, if red means stop, and must under no circumstances be disregarded, there will be many stops made as foolishly as the engineer who, being directed to stop when he saw cattle, did so, although the cattle he saw were in a field along side of the track. If men always stopped their trains when they saw "red" there would be chances for a good many tail-enders; but the fact is they do not always stop when they see "red" even on roads which try to make such a rule. If they did the maple leaves in the fall or red sumac seen suddenly in rounding a curve, on mountain roads, would make a sudden call for brakes. The fact is, in this as in everything there must be brains behind and above the eyes that see signals to give them value and prevent unnecessary and annoying stops and possible accidents. Men cannot do the work of a railroad in any department as automatons. It takes judgment and brains everywhere—on the engine, on the train, on the track and in the offices. No rule can possibly cover want of judgment and make things safe. Hence no rule like "Red—danger, stop," is practically or is in fact observed absolutely anywhere. Red comes nearest, but has exceptions as mentioned. The fact is, that it is the location, shape and handling of the red signals that make them danger signals. If these things are true, and that they are does not admit of a reasonable doubt, the writer fails to see any reasonable objection to carrying red flags for a following train.

It can be seen farther and seems to be specially adapted for that use.

All the roads in the country use red signals for following trains, except the New York Central & Hudson River, the Pennsylvania, and roads of the Pennsylvania Company, which are practically under control of the Pennsylvania Railroad. Why should all other roads change their practice at considerable expense, when the use of red for a signal for following trains will no more impair the efficiency of a red flag or a red light (in the hands of a competent man) as a danger signal, than the use of a green signal for following trains will impair its efficiency as a caution signal?

A combined signal of the colors would hardly be a safe signal for trains, and would be difficult to arrange for a night signal.

Why not leave red (which is used by nearly all the roads in the country) as the signal for following trains having same rights as the schedule train carrying the signal, white for a train following which is irregular and green to indicate that the train carrying the signals is itself irregular? There is no doubling of colors and no danger of their being mistaken. It is as easy to teach men that if they have the right to the road a red flag carried on the front end of the engine is not a stopping signal as to teach them anything else, and it has not been claimed (within the knowledge of the writer) that its use as a signal for following train has impaired its efficiency as a danger signal.

Men must be taught the value of signals, taught the rules, train rights, in short must be taught the business of taking care of themselves and of the company's property.

Many things which are good on double-track or four-track roads are of very doubtful value on single-track roads, and single-track roads must be as much considered as double or four-track roads, in order to get a uniform code of signals applicable to both.

Many double-track roads run extra trains habitually, without any set of signals being carried to warn trackmen, work trains or others that an extra is being run. The writer trusts that no argument is necessary to show the value of signals for an extra train on a single-track road to warn the trackmen, work trains and others that an extra may be expected. It is true, even on single-track roads, that extras must occasionally be run for which no signals have been carried, but suppose that this occurs in one case in ten, is not the balance in favor of the signals, and the inference fair that there should be such signals, and that they should be used whenever possible to do so? The writer knows from his own experience that he feels safer when such signals have been carried, and believes that all other train-men feel the same way.

"Torpedo Signals," one (1), danger; stop; two (2), caution; run carefully.

The signal for danger should consist of fewer detonations than one for caution, so that if one cap fails in a caution battery the signal becomes one of danger.

"Suppose one cap fails in a danger battery, what have you left? Is it safe to depend on one cap for danger? It may fail to explode, even as one out of two caps in a caution battery may fail. Should not equal (at least) precaution be provided for in a danger battery? How would it do to put one for caution and two for danger, then if your danger signal failed 'caution' would be left; or put two for caution and three for danger, it being understood that one or two caps meant caution and three danger? It would seem that that failure of a danger signal should be provided against with at least equal care that the failure of a caution signal is."

The writer hopes he has given reasons sufficient to justify referring the matter of uniform signals back to the committee, in the hope that the work may be revised, enlarged and improved.

"SENEX."

#### Improvements of the Locomotive.

Messrs. Wm. Woodcock and Amos Pillsbury, the committee appointed to report on this subject at the late annual convention of the Master Mechanics' Association, state that inquiry shows that little change or improvement has been made in the locomotive during the last two years, and that this arises from the fact that the business on the railroads has diminished, and that therefore this is not a favorable time for experiment.

While there is still room for improvement of the locomotive, the field is diminishing, as the locomotives of the present day are well adapted for the service required. It is only by comparison with the engines of the past that we note the great changes that have been made.

Among the improvements made last year was the Coventry boiler, constructed at the Brooks Locomotive Works. It is a return-flue boiler, having 43 3-in. return-flues, the smoke stack being placed over the crown sheet. No trial has yet been made with this engine.

Mr. Jacob Johann (Wabash, St. Louis & Pacific) writes: "The general tendency among American master mechanics seems to be toward building larger boilers, thereby increasing the heating and water capacity, and in my opinion this movement is in the right direction, especially in the case of fast engines running heavy trains. The increased piston speed necessitates an increase in the capacity of the boilers. If the boiler is not capable of furnishing all the steam that is required under any and all circumstances, you can safely predict a failure as the result of neglecting one of the most vital parts of a locomotive. The increasing working pressure necessitates a stronger boiler, requiring more attention to the material of the boiler and fire-box, the manner of riveting, and the strength of the bracing. Every advance in this direction secures more effective work from the evaporation of a given amount of water. A successful and economical engine should have as large a boiler as possible, with a maximum heating surface, and designed to carry a working pressure considerably above the ordinary practice. He who first reaches the limits in these three directions will secure the fastest and most powerful locomotive, under given conditions, minor details being also improved."

Mr. Alex. Mitchell, Superintendent of the Lehigh Valley Railroad, furnished the committee with blue prints and a photograph of a locomotive designed by him for heavy mountain service. The general design of this engine is shown in the accompanying illustration, and the general dimensions of the engine are as follows:

Boiler, diameter at front end.....	54 in.
" " material.....	Otis steel.
Fire-box, length.....	11 ft.
Flues, diameter outside.....	2 in.
" " number and length.....	238, 12 ft.
Cylinders, diameter and stroke.....	20 in. x 28 in.
Driving-wheels, diameter.....	50 in.
Weight.....	108,000 lbs.

The first, second and third pair of drivers have flanged tires, while the fourth or rear drivers have plain tires 7 in. wide. The single wheel or pony truck in front is loaded with 5½ tons, and the similar back truck with 4½ tons. The object has been to get a large engine for heavy service with a short rigid wheel-base. The front truck is equalized with the first and second pair of drivers, the third and fourth pairs are equalized, and the rear truck takes its own weight, having a deep pocket with long spiral springs on the centre plate and volute springs over the boxes.

Mr. Mitchell says that the engine runs round curves with great ease, and is hauling very heavy trains, but no accurate data can yet be given. Blue prints of designs for somewhat similar engines, but with five instead of four pairs of coupled wheels, show the relation between the wheels and rails on a curve of 330 ft. radius. In one design, the first, third, and fifth pair of driver tires (counting from the front end of the engine), are plain, while the second and fourth pairs are flanged. The rigid wheel-base is thus only 8 ft. 3 in., though the total driving-wheel base is no less than 16 ft. 11 in., and the total wheel-base of the engine, from centre to centre of pony truck wheels, is 31 ft., an unprecedented length. The other design has the same distances between the wheels, but the first and fourth pairs of drivers are flanged, and have ½ in. side play in the boxes. The remaining three pairs of drivers have plain tires, 8½ in. and 7 in. wide, according to position.

The Schenectady Locomotive Works furnished the committee with blue prints and specifications of a Mogul freight locomotive with cylinders 19 in. x 24 in. The fire-box is adapted for burning bituminous coal, and is placed above the frames, a departure from former practice which meets with favor from our Master Mechanics, and is rapidly coming into use. The performance of these engines is reported as very satisfactory.

As there is now a tendency to substitute iron for wood in rolling stock, the design and construction of an iron tender truck made by the same works seems worthy of attention.

#### The Size of Freight Car Axles.

The following is an abstract of a discussion which took place on this subject at the recent Master Car-Builders' Convention at Saratoga:

Mr. WALL (Pittsburgh, Cincinnati & St. Louis and Chicago, St. Louis & Pittsburgh) wished to ascertain the sense of the meeting as to whether the size of the Master Car-Builders' standard journal bearing should be increased for all cars over 40,000 pounds capacity.

Mr. BISSELL (Barney & Smith) seconded the motion. Mr. KIRBY (Lake Shore & Michigan Southern): The journal and the wheel-fit are large enough for a 40,000 lbs. car, but the centre is too small. It should not be less than 4¼ in. in diameter. The dimensions would have to be increased in proportion for the 60,000 lbs. car.

Mr. HOVEY (Rochester & Pittsburgh) agreed with Mr. Kirby. Axles under our 40,000 lbs. cars are too light in the centres; 4¼ in. diameter in the centre is quite small enough.

Mr. PACKARD (New York Central): The centre is too weak, but can be increased without interfering with interchangeability. Our road uses 4½ in. diameter in centre.

Mr. BISSELL: All our axles for passenger service are 4½ in. in centre. This is very necessary for 42-in. wheels, but we use the same axle throughout. The increased tonnage placed on a freight car makes it necessary there.

THE CHAIRMAN (Mr. CLOUD, Pennsylvania), wished to get the sense of the meeting as to whether the present size of the journal of the Master Car-Builders' axle is sufficient for cars over 40,000 pounds capacity.

Mr. TOWNSEND (Chicago & Alton) We are carrying from 20 to 32 tons on our cars, and we are using the M. C. B. standard journal.

The motion was decided in the negative.

The SECRETARY: I would like to put a resolution to this Association: whether it is their sense that the M. C. B. journal is large enough for cars whose capacity does not exceed 40,000 lbs.

Mr. RHODES (Chicago, Burlington & Quincy): The journal is large enough, as the Association made that their maximum size. When the journal wears a little it should still be large enough to carry the weight of the car. It is very im-



portant that the Association should make a limit, a maximum and a minimum size. Many journals running are much too small for freight cars.

The Chairman stated that the Pennsylvania used a  $3\frac{1}{4}$  in. by 7 in. journal for 50,000 lbs. cars.

The Secretary's question was then put to the meeting and unanimously decided in the affirmative.

The SECRETARY then asked whether it is the sense of this meeting that the centre of the M. C. B. axle is large enough for a car not exceeding 40,000 lbs. in capacity.

Mr. HOVEY would not make it less than  $4\frac{1}{4}$  in., and preferred  $4\frac{1}{2}$  in. When a car is loaded to its capacity of 40,000 lbs., a wheel tram placed on the flanges shows that the distance between the backs of the wheels is nearly  $\frac{1}{2}$  in. greater at the top of the wheels than at the track.

Mr. MILLER (Michigan Central) agreed with Mr. Hovey, but did not approve of the form of the M. C. B. axle between the wheel-flts. It is run down almost straight to the centre, so that from near the wheel-seat to the centre it is nearly the same size. It should taper from the wheel-seat to the centre.

Mr. HOVEY: Nearly all axles in cars built by the master car-builders are tapered from the wheel-seat down to the centre, but in cars built by contract they are nearly straight from the wheel-seat to the centre.

The Secretary's question was unanimously decided in the negative.

The SECRETARY moved that the question whether a change should be made in the size of the M. C. B. standard axle from  $3\frac{1}{4}$  to  $4\frac{1}{2}$  in. on the centre and making it a

The SECRETARY believed that such an amendment would be defeated.

Mr. DAVENPORT: The taper does not run from the wheel-seat, a  $1\frac{1}{2}$ -in. shoulder being left before the taper commences. The exact form of the axle should be carefully specified, so as to guide competing contractors.

Mr. BLACKWELL (Norfolk & Western) considered that at every three or four inches along the axle the diameter should be specified. It is very important that the wheel-fit should extend some distance from the hub of the wheel and as far as  $1\frac{1}{2}$ -in. On our road (5 ft. gauge), we are turning that fit  $1\frac{1}{2}$  in. further on the axle, so that, when the day comes for changing to the standard gauge, or 4 ft. 9 in., we can close those wheels on the axle without any more tool work. I would suggest that  $1\frac{1}{2}$  in. on either side of the hub be the point fixed, and that between that point and the centre, certain even distances be taken, and the diameter be specified.

Mr. MILLER: I move that the form of the axle be left discretionary with the Secretary, and let him submit a diagram of it with the letter ballot.

Mr. Miller's motion was seconded and carried, and the discussion on this subject closed.

#### Philadelphia & Reading Standard Coal Cars.

The accompanying illustrations represent a coal car largely used on the Philadelphia & Reading Railroad, which has no less than 3,134 cars built in accordance with the

circular, which was distributed to the different roads throughout the country:

"1. What kind of lubricant do you use on valves and cylinders?"

"2. Have you made any experiments with other kinds of lubricants? If so please state results obtained?"

"3. How is the lubricant applied—by self-feeders, cup on steam-chest or through pipes from cab? Please describe the device you are using. If self-feeding cup, where is the best location?"

"4. Have you made any experiments with self-oilers? If so please describe the different devices and give results of experiments?"

"5. What mileage are you getting with the lubricant you are using to the pint or pound?"

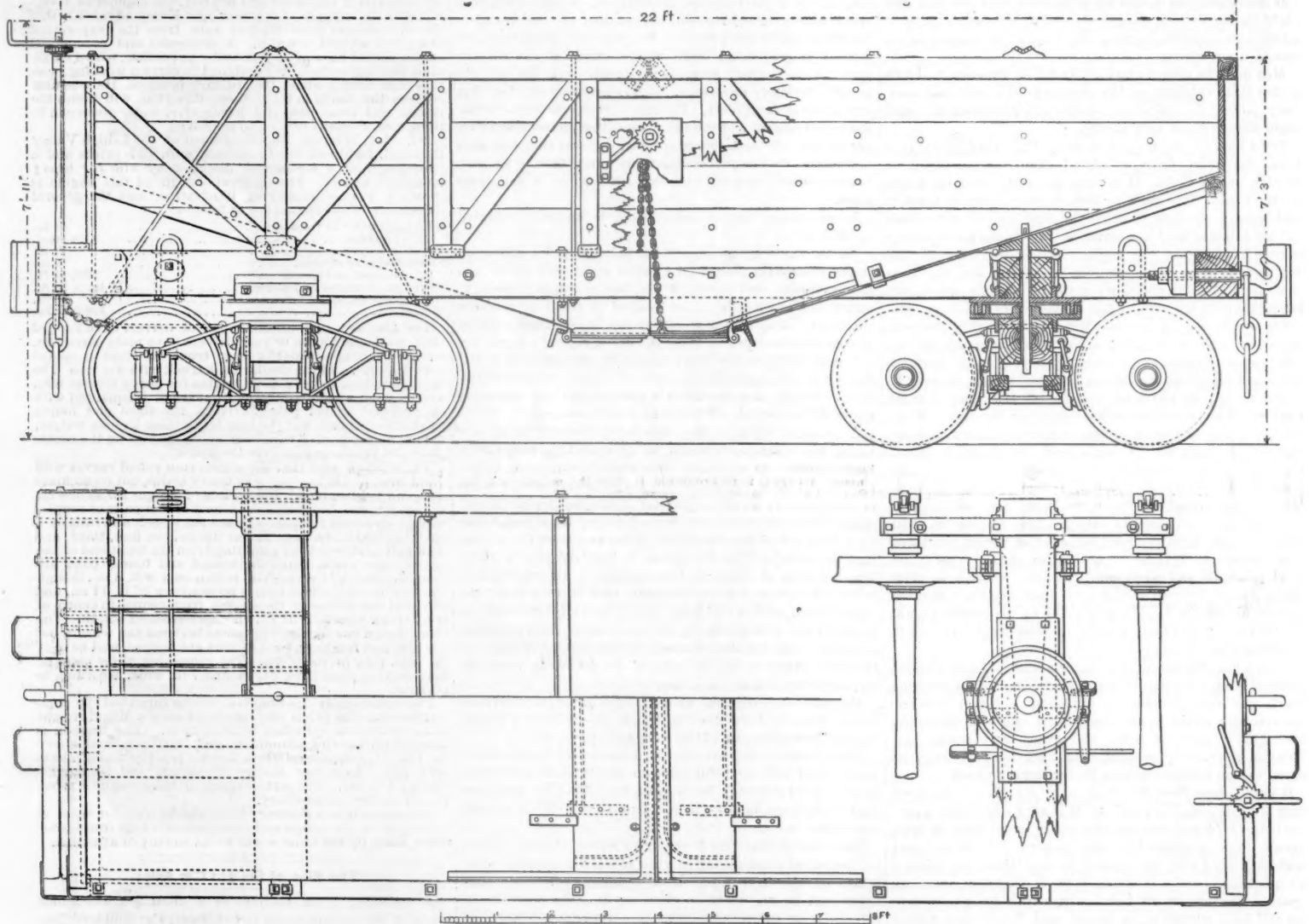
"6. What results have you obtained in the wear of valves, piston-packing and glands with the lubricant you are now using compared with others you have tried?"

"7. What, in your opinion, is the best method of applying the lubricant to cylinders?"

"8. If you are using a compound that is made of several lubricants, please give proportions."

"In answer to the above questions please do not confine yourself to the questions, but give any facts or exact data you may have bearing on the subject."

Of the 20 roads reporting answers to this circular, 8 use tallow as a lubricant, while 18 use valve oil; 21 have made experiments with lubricants; 5 have not made experiments; 12 apply lubricants exclusively through pipes leading from



STANDARD COAL CAR, PHILADELPHIA & READING RAILROAD

straight line from the centre to the wheel-seat, be submitted to the Association by letter ballot.

The motion was seconded.

Mr. MILLER: There ought to be a little space parallel in the centre of the axle, instead of running the taper exactly to the centre. An axle could hardly be hammered to that form.

The SECRETARY then moved that the Committee on the Standard Freight Car Truck be instructed\* to use the M. C. B. standard journal bearing and journal box in the truck used for cars not exceeding 40,000 lbs. capacity.

The motion was carried.

Mr. DAVENPORT (Erie Car Works): The M. C. B. axle is now  $4\frac{1}{4}$  in. diameter at a point 1 ft.  $7\frac{1}{2}$  in. from the centre. If the diameter at the centre is made  $4\frac{1}{4}$  in. the whole centre of the axle will be virtually parallel, the variation being only  $\frac{1}{4}$  in.

The CHAIRMAN: The committee will have perfect freedom now to make the taper as they see fit.

Mr. MILLER: I think the ground has all been gone over, and it provides for a straight taper from the wheel-fit to the centre.

The SECRETARY suggested that the  $4\frac{1}{4}$  in. diameter be also increased, and moved that the  $4\frac{1}{4}$  in. be omitted by the committee from the axle which it proposes for the new standard freight truck.

The motion was carried.

Mr. DAVENPORT: Now we have eliminated that  $4\frac{1}{4}$  in., but we have not said anything as to what the idea is as to the shape of the axle. Do you propose to leave that to the committee?

The SECRETARY: We propose to say nothing about it.

Mr. HOVEY wished to amend Mr. Forney's resolution, and make the taper run from the wheel to the centre.

\* For other instructions to this committee see Railroad Gazette for June 20, 1884, page 457.

drawing shown, in its service. The general plan of these cars accords with that of the eight-wheel coal cars which have been used on the lines of the Philadelphia & Reading for many years past; the principal variation is in the increased dimensions of the parts to meet the increased load carried by them. The car is capable of carrying 25 gross tons, or 50,000 lbs., but is rated as a 16-ton car (32,000 lbs.), which expresses what may be called the "struck measure" of capacity—that is to say, the lading should not exceed in height the level of the top of the car.

The total weight of the car is 18,480 lbs.; weight of each truck, 4,800 lbs.

It will be noticed that the doors and sloping floor of the car are of wrought-iron, and that the centre sills are completely cut away, the connection between the two ends of the car depending on the body and on the side sills, which measure each 10 in. deep by 4 in. thick. The body bolsters measure 12 in. x 9 in., and the end sills 10 in. x 10 in. The design of these cars is the fruit of a very extensive experience in the conveyance of anthracite coal, and is well worthy of careful study.

#### The Lubrication of Locomotive Valves and Cylinders.

The following is a report, slightly condensed, presented on this subject at the recent Master Mechanics' Convention by a committee consisting of Messrs. H. Schlacks (Illinois Central), J. M. Boon (late Chicago & Northwestern), and H. Middleton (St. Paul, Minneapolis & Manitoba):

The committee on "the Best Method and Material for Lubricating Valves and Cylinders" prepared the following

cab to steam chests, feeding at intervals by hand; 14 in connection with pipes leading from cab to chests and intermittent hand feed, use sight feed cups in cab, 9 of which use in addition self-feeding cups located on chests; 17 have made experiments with self-oilers; 5 have made no experiments; 4 not stated.

The following tabulated statement shows lowest and highest mileage to a pound of tallow or pint of oil used for valves and cylinders in passenger service, and in freight service as obtained in ordinary practice, and the different experiments made:

Class of service.	Lubricant.	Method applied.	Lowest mileage to a pound of tallow or pint of oil.	Highest mileage to a pound of tallow or pint of oil.
Passenger.	Tallow.	Pipes from cab, intermittent hand feed.	55	60
		Self-feeding cups on chests.	52	160
Freight.	Tallow.	Pipes from cab, intermittent hand feed.	26	40
		Self-feeding cups on chests.	18	31
Passenger.	Valve oil.	Pipes from cab, intermittent hand feed.	43	114
		Sight feed in cab, through pipes to chest.	50	206
Freight.	Valve oil.	Pipes from cab, intermittent hand feed.	30	85
		Self-feeders on chests.	35	59
		Sight feed in cab to pipe.	48	100
		Sight feed in cab through pipes to chests.	55	125



As to the effect of tallow on wear of valves, piston packing and glands, 4 have obtained good results, 6 have had bad results and 16 have not stated their experience.

With valve oil, 17 have had good results, 9 have given no information. None of the reports received mention any bad effects resulting from the use of valve oil.

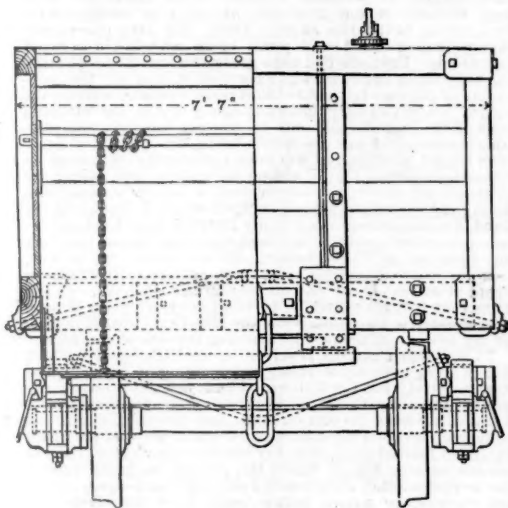
Many different opinions are expressed as to the best method of applying lubricant to cylinders. Of the 28 replies received to the circular, 9 have not expressed any opinion on this point. Of the remaining 17, 8 prefer sight feed cup in cab leading through pipes to the steam-chests; 5 consider pipes to chests feeding at intervals by hand the best; 2 favor sight feed cup in cab feeding directly to dry pipe, and 1 has obtained best results with self feeding cup directly on chests.

With the exception of one road, the valve oils used are those brands purchased in open market, and generally known throughout the country. The valve oil used by the Ohio & Mississippi is one of their own manufacture, consisting of one part tallow and two parts Virginia oil, costing 30 cents per gallon, which gives good results as to wear of valves, piston packing, etc., with an average of 67 miles to a pint for passenger and freight service, the oil being applied at intervals by hand through pipes leading from cab to steam-chests.

The objection generally advanced against the use of tallow is its corrosive effect upon the surfaces of the valves, steam-chests and cylinders exposed to its action, resulting probably from acids and adulterations found in refined tallow of ordinary grades. The roads on which good results have been obtained from the use of tallow are those in the Southern states, which are able to secure an abundant supply of pure country tallow that has not been subjected to the manipulation of a refining process. On one road in North Carolina, where tallow had been used exclusively, the original steam-chests and cylinders of an engine which has been continuously in service for 28 years present no evidence whatever from corrosive action, and are still in good condition, other engines on same road being in equally good condition. Were it possible to procure pure tallow in unlimited quantities, there would be little occasion for discussion on this subject; but as few roads are thus fortunately situated, the lubricant best adapted as a substitute for tallow becomes a matter of importance.

The results obtained from the use of lard oil, aside from the closing up of exhaust openings by the accumulation of gum in the nozzles, are, as a rule, satisfactory; but its cost is such that a cheaper oil is more desirable.

Of the many kinds of oil technically known as "valve" or



Standard Coal Car, Philadelphia & Reading Railroad.

"cylinder" oils which are at present offered in the market, your Committee are not prepared to express an opinion as to which may be deemed the best, finding among those who have used them many advocates in favor of each different kind. These oils are the result of study and experiment on the part of the manufacturers to produce a lubricant combining all the requisite qualities, at moderate cost; and judging from the extent to which such oils have been introduced, their efforts have been successful.

With regard to the best method of applying lubricant to cylinders, your Committee find a variety of opinions, due chiefly to varying conditions on different roads. The old practice of applying the lubricant at intervals by hand through ordinary cups located directly on steam chests is a crude and wasteful method, unsatisfactory in its results, and on most roads has been abandoned. The location of the oil cups in cab connecting with pipes leading to the steam-chests enables the engineer to exercise direct supervision on the amount of oil used and overcomes many of the objections to outside oiling. It is often considered the best method of applying the lubricant, where there has been little or no experience with the more recent automatic improved oilers. The objection to all methods of hand feed is, that while an engine is in motion reliance is necessarily placed on the care and judgment of the engine-men to feed at proper intervals the least amount of oil required to maintain thorough lubrication. They must not neglect this duty; and to obtain the best results they must possess a sufficient degree of intelligence to use only the proper quantity of oil each time the feeding is done.

The introduction some years ago of the automatic cup or self-oiler, located on the steam-chests and feeding the lubricant continuously was an improvement which, however, did not meet all the requirements, as in extreme cold weather the water within the cup would freeze, stopping the lubrication. Many expedients to overcome this trouble were resorted to, but without much success, and, in consequence of its unreliability in cold climates, this cup has in a great measure passed out of use. In the South, where this difficulty is not experienced, the cup is still considered on many roads well adapted for the purpose.

The latest improvement is the sight feed automatic cup located in cab, and feeding oil either directly to dry pipe, or through small pipes to the steam-chests. Its action is continuous, the oil being displaced by condensation of steam taken from the boiler. The feed, drop by drop, in plain sight, admits of perfect regulation. Experiments made by Mr. Schlacks show that the sight feed cup gave in passenger service 80 per cent. better mileage and in freight service 47 per cent. better mileage than the best results obtained by hand feed through pipes from cab leading to chests. The Committee consider that the lubricant should be supplied in certain quantities to each valve and cylinder, and not to the

dry pipe, which arrangement may lead to unequal distribution.

The Committee consider the leading brands of valve oil well adapted for the lubrication of valves and cylinders, and are at the present time the best lubricants available for the purpose in quantities sufficient for general use. The best method of applying lubrication to valves and cylinders is the automatic sight feed cup located in cab and feeding through pipes and steam chests.

#### DISCUSSION.

Mr. LAUDER, Old Colony: The subject of sight feed lubricators is new and should be ventilated. My experience is strongly in favor of using the automatic cup located in the cab, under the eye of the engineer, with a sight feed and ordinary oil pipes leading to the steam chests. A passenger engine with the Swift lubricator is running 262 miles with one filling, or a quart of oil.

Mr. HATSWELL (Flint & Pere Marquette) used sight feed lubricators feeding into steam chests. The engines have 16 in. by 24 in. cylinders, and run 520 miles with one quart of oil. The steam chest covers have not been off for ten months.

Mr. SETCHEL (Ohio & Mississippi): Sight feed lubricators work exceedingly well. One engineer said that he would rather pay for it out of his own pocket than have it taken off his engine. The principle of lubricating drop by drop is correct, but there might possibly be an objection to the use of sight feed lubricators on a switch engine in a crowded city switching in the streets and not allowed to open the cylinder cocks. A slight accumulation of steam in the cylinders from the sight feeder makes it difficult to reverse the engine. A very inferior quality of oil can be used with a sight feeder, which is another advantage.

The discussion then closed.

#### Accident Investigations by the New York Railroad Commission.

The New York Railroad Commission, at a meeting held in Albany, July 8, filed its decision in a number of accident cases in which investigations have been made. The accidents were all on the New York Central & Hudson River road.

##### THE CHITTENANGO COLLISION.

In the case of the Chittenango collision, the decision in which we have already published (in the *Railroad Gazette* for June 20, page 462), the Board, it may be remembered, censured the company for not having made a change in the switches on the freight tracks corresponding with the change made in the running of trains on those tracks. Since that report the company has applied for and has had a rehearing, and the supplemental decision of the Board is as follows:

"The facts therupon for the first time proved, satisfy the Board that its censure of the road and management should be materially modified.

"The road understands the report to condemn the practice of running 'facing points' at all places on its line, and in this respect insists that it is unjust and impracticable. The Board had no such intention. The report simply deals with cross-over switches between main line tracks. There are many places, as at yards, side tracks, depots and freight houses, where it is unavoidable to face the points; and the Board had no intention to censure the road for these or for the manner in which it endeavors to guard and make them safe. That for which the Board particularly found fault with the road was the apparent false and excessive economy which made it appear that the road had neglected to employ sufficient additional track force, and to furnish sufficient new material to promptly change the cross-over tracks into trailing switches during the summer of 1883. The additional facts proved clearly show that criticism to be unduly severe. When the order was given 'to change the direction of trains on tracks 3 and 4, and as fast as possible to change the cross-over tracks and switches,' it was determined by the management to substitute for the switches in use the improved split-point switch. This determination is to be commended. The order was given for these switches, and the delay in the work was largely occasioned by the delay of the manufacturers in filling the order. As fast as the new switches could be obtained the cross-over tracks were changed—points at which the danger of accident was most imminent being first dealt with. Had additional track force been employed it could not have done the work faster than the switches could be obtained. Pending the change, as was stated in the report, the points in question at Chittenango were as well guarded by signals and by a switchman as they could be. At the present time the road insists that substantially all of these switches have been made trailing where it is practicable so to arrange them.

"These facts, which were not proved by the road at the investigation, but which upon the rehearing have been established to the satisfaction of the Board, make it but just to the road and management for the Board to withdraw the censure passed upon them in the report for not 'having vigorously followed the change in the direction of trains on tracks Nos. 3 and 4 with a corresponding change in all of the cross-over tracks and switches between those tracks.'

"The Board is still of the opinion that the road ought not to have changed the direction of trains upon tracks 3 and 4 until it was prepared to immediately change its cross-over tracks and switches so as to make them trailing. In this respect, the Board would not feel justified in withdrawing or modifying what it has heretofore said upon that subject."

##### THE SCHENECTADY DERAILMENT.

In the matter of the accident at Schenectady, April 22, in which an east bound freight train ran upon a siding and partly into the Erie Canal and an employé was slightly injured, the Board finds that as track No. 4 approaches the Erie Canal from the west there is a switch from it which runs to coal pockets, and, in the present running of east-bound trains, trains run over the switch 'facing points.' The Board finds that the switch was properly guarded as far as possible by a switchman and signals. In the present case it was carelessly left open. The accident shows the danger of running facing points and the Board considers it a further warning against that practice. Had a suitable snubbing post been placed at the canal bank, it would have prevented the train from running into the canal. Since the accident an effort in this direction has been made and the Board deems no further action necessary.

##### THE BRIGHTON COLLISION.

In the matter of the collision at Brighton, the junction of the main line and the Auburn branch, on May 22, in which Prince Yanishano, of Japan, and a number of others were injured, the majority of the Board makes the following decision:

"1. The Board finds that George Miller, the engineer of freight train No. 49, was responsible for this accident, and recommends that he be turned over to the civil authorities for trial.

"2. That Morris Milligan, the conductor, was greatly to

blame in not having insisted upon Miller's running slower at previous times on the trip.

"3. It approves of the action of the New York Central & Hudson River Railroad Co. in interlocking the switch at the junction with a throw-off on the Auburn road, so that in case of disobedience of orders and instructions an engineer will not be able to get on the main track. It also suggests to the road to investigate the device known as a speed indicator, which is attached to caboose cars and records the speed of trains, and shows when engineers exceed their running time, with a view to the adoption of the same if found practicable."

This is signed by Commissioners Kernan and Rogers; Commissioner O'Donnell concurs with the following addition:

"The New York Central & Hudson River Railroad deserves censure for having in its employ an engineer who was in the habit of using intoxicating liquors. Had it been diligent to enforce its own rules this accident would not probably have occurred. It is no excuse for the road to say it did not know of the habits of the engineer in this respect. It is bound by the highest consideration of life and safety to know whether its engineers are sober men."

##### THE FALLS BRANCH COLLISION.

In the matter of the collision on the Rochester & Niagara Falls branch on the night of May 28, which occurred on a single-track line, the Board finds that it was due to the fault of the telegraph operator at Murray, but considers that there is some excuse for him from the fact that he was very young and was placed in a position of entirely too much responsibility. They also find that the company's rules throw the entire responsibility upon the operator, depending too much upon his care and ability. The conclusions of the Board in this case are as follows:

"The Board finds that Joseph Drexilius, Train Dispatcher, was gravely at fault in hiring so young a boy as H. F. Martineau to be telegraph operator at Murray, notwithstanding the fact that the boy bore a good reputation and had been instructed by a careful operator; and that G. H. Barrows, Division Superintendent, was at fault in permitting Martineau to remain in this position.

"It recommends that the New York Central & Hudson River Railroad adopt the following general rule, to wit: 'When trains running in contrary directions are to be moved toward each other by special order, the train having the right of road shall first receive the order, which shall be acknowledged to the train dispatcher by the conductor and engineman of said train before an order shall be given to the opposing train.'

"That this rule shall only be deviated from in cases of emergency or accident, when orders cannot be first communicated to the conductor and engineer of the train having the right of road, or in cases where such train is greatly behind time, in which cases station agents may be ordered to hold such trains for orders, but shall not be permitted to give back the '18' until after they have displayed a red signal."

##### THE SHORTSVILLE COLLISION.

In the matter of the collision at Shortsville on June 5, in which one employé was killed and one employé and three passengers were injured, the Board finds that the engineer of an engine on a single track, the Auburn Branch, received orders at Canandaigua to wildcard to a station about two miles west of Geneva. On reaching Shortsville the engineer did not blow for the switch, but shut off steam, consulting his watch and time-card when he was about at the station. Immediately after so doing he saw a west bound passenger train approaching, and reversed his engine. When the collision occurred he had brought it nearly to a standstill. It seems clear to the Board that the responsibility of this accident belongs to the engineer on the wild engine, who took unjustifiable risks. He also violated the rules in not seeing that he had sufficient time at Shortsville in which to take the switch and clear the way for the west-bound passenger train, as the rule provided. He should have called for and have taken the switch at the west end of the siding, especially as he must have known that he had but five minutes to get the switch when he reached the station. He carelessly took the risk of reaching the east end of the siding when he found that he had passed the west switch, and the Board considers that "the engineer of a wild engine has no right to run so close to the time of regular trains as he did, and in this case seemed to think he had a right to do. When innocent people are killed through such negligence and carelessness as appears in the case of Wilson, the Board cannot do less than recommend that he be discharged from the road, and to suggest that the case is a proper one for the consideration of the civil authorities."

##### THE SCRAP HEAP.

###### Coupling Pins.

As the umbrella is the property of the community in general, so is the coupling pin the property of railroads in common. There is one difference, however. While few people who possess umbrellas buy them, each railroad has to supply its quota of iron pins. A promiscuous pile of rusty coupling pins lying against a shed under the bridge which spans the net-work of tracks at West Albany attracted the attention of a *Journal* reporter. Some were short, others long; some were round, others flat. Shoulders were wrought on some, others had tops flattened out. A few had eyes on top, and others again had a short handle formed of a thinner band of metal. No two of the pins were exactly alike. Looking about the tracks, the reporter noticed that at short intervals were scattered other pins. "Do you pretend to keep the coupling pins of the different roads apart?" was asked of a brakeman who stood near by. "No; why do you ask? Just for curiosity, hey? There are any quantity of them, I can tell you. We keep all kinds on hand. There are so many different makes of bumpers that we are compelled to have all descriptions at hand. Some bumpers have an oblong hole in them. In these we cannot use a round pin. Then again we cannot use the flat pins in a round hole." "You know the makes of the various roads, don't you?" queried the reporter. "We become acquainted from seeing them so often," was the reply. "Some roads," continued the brakeman, "have their pins stamped with their initials, but it's no use. We never look to see whether a pin belongs to this road or that; but take the first one we think will fit the bumper. A few roads have their pins fastened with a chain, but it won't save the pin. The chain gets broken and away it goes. If I remember aright the Central tried this plan. It would not work satisfactorily, and nine times out of ten the brakemen would use a loose pin and allow that on the chain to dangle on the journey. Some roads don't put enough iron in their pins, for they bend when they get on the forward cars of a long train. Of course it is not always the fault of the pin, but sometimes the defect is in the bumper. Not a few pins travel a great distance! Well, I should say they did. In the West Albany yard I have seen pins from Omaha, yes, and from California, too, and I would not be afraid to bet that there are some here now. We often get the pins of Canadian roads, as well as those from Southern roads. The other day I saw a pin which was marked in a way indicating that it belonged to the Denver & Rio Grande. If a person will give the matter a thought it will not seem strange. Say a train



comes in here from a connecting road. It is broken up to have the cars billed in different sections placed on other trains. The pins are dropped on the ground, or put on cars of other trains going further or in another direction. They keep being transferred so that they stay from home and never get back again. I would not be afraid to wager that lots of pins made in the Central shops have been used by the road in the first instance on an out-going train, and have never come back again, but been worn out by other roads. We use the pins of the different roads in the same way—I'm off, here comes work for me," and jumping on a section of moving cars being made up into a train, the brakeman was gone.—*Albany Journal*.

#### Veteran Railroad Men.

The *Buffalo Express* of July 16 says: "Mr. Benjamin Pfeiffer's thirty-sixth year as conductor on the New York Central was completed Sunday last. All these years he has been running between Buffalo and Suspension Bridge. Pfeiffer's popularity is widespread."

The *Albany Argus* says: "The old engineer on the Central road, known among railroad men as Uncle Rube Allen, will complete, in a few days, his fortieth year as a passenger train engineer, and it is understood that on that day he will relinquish the throttle and retire from railroading. During the 40 years that he has been in the cab, he has never met with an accident or killed a passenger or employe."

#### Couplers.

The train-coupling crank is loose.—*Boston Post*.  
One of the hardest things to accomplish is to waken a man in a railroad car who is occupying two seats.—*Philadelphia Call*.

Reading in the cars is said to be almost as injurious to the eyesight as a woman with an open parasol.—*Boston Commercial Bulletin*.

Another automatic car-coupler was invented yesterday. Count that day last whose low-descending sun adds to the number not a single one.—*Lowell Courier*.

Going down the main line of the Rome, Watertown & Ogdensburg the other day the locomotive whistled and the train began to slow down. A middle-aged man, after stretching his neck out both sides of the car, turned to a fellow passenger and said, "There ain't no depot here." "Yes, there is," said the other, who was evidently familiar with the road. "Well, then, where is it? I've looked on both sides of the track and can't see any." "Do you see that man coming across the field with a mail bag?" "Yes." "Well, that's the depot."—*Buffalo Courier*.

#### A Good Story Misplaced.

A good story comes from an authentic source: Some years ago the floods carried away a bridge on the Michigan Central, and until it could be replaced there was a suspension of traffic. Said the General Superintendent to the hunt, hard-working old master bridge-builder: "You must put all your men on that bridge; they must work all night, and the bridge must be completed by daylight. The Chief Engineer shall furnish you with the plan, and you shall go right ahead." Early next morning the General Superintendent, in a very doubtful frame of mind, met the old bridge builder. "Well," said the General, "did the engineer give you a plan for the bridge?" "General," returned the old man slowly, "the bridge is done. I don't know whether the picture is or not."—*Exchange*.

This story has been going the rounds of the newspapers recently. It is, however, at least 20 years old, having been first told of Stonewall Jackson and his bridge-builder. Some one has picked it up and has turned it into a railroad story, although the adaptation has been rather clumsily done.

#### A Bird's Nest Story.

They haven't many snakes in England, but that doesn't discourage the *Railway and Tramway Express* over there, as witness the following story, which is hard to beat: "An interesting circumstance illustrating the confiding nature of the robin red breast has been noticed in the freight yard at Worthing, on the Brighton line. An old rusty beer can lying in the four-foot way of one of the roads was selected by a pair of happy birds in which to build their nest, four eggs being deposited therein, and although shunting over the road has gone on daily and the couple has been visited by many of the curious, they have actually succeeded in hatching their little brood."

#### A Long Railroad Journey.

Dr. David Gill, the astronomer at the Cape of Good Hope, thus illustrates the distance from the earth to a fixed star, Centauri. "We are a commercial people, we like to make our estimates in pounds sterling. We shall suppose that some wealthy directors have failed in getting Parliamentary sanction to cut a sub-Atlantic tunnel to America, and so for want of some other outlet for their energy and capital they construct a railway to Centauri. We shall neglect for the present the engineering difficulties—a mere detail—and suppose them overcome and the railway open for traffic. We shall go further, and suppose that the directors have found the construction of such a railway to have been peculiarly easy, and that the proprietors of interstellar space had not been exorbitant in their terms for right of way. Therefore, with a view to encourage traffic, the directors had made the fares exceedingly moderate, viz., first class at one penny per 100 miles. Desiring to take advantage of these facilities, an American gentleman by way of providing himself with small change for the journey, buys up the national debt of England and of a few other countries, and presenting himself at the booking-office, demands a first-class single to Centauri. For this he tenders in payment the scrip of the national debt of England, which just covers the cost of his ticket; but I should explain that at this time the national debt from little wars, coupled with some unremunerative government investments in landed property, had run up the national debt from 3,500 millions to 5,500 million dollars. Having taken his seat, it occurs to him to ask 'At what rate do you travel?' 'Sixty miles an hour, sir, including stoppages,' is the answer. 'Then when shall we reach Centauri?' 'In 45,663,000 years, sir.' 'Humph! rather a long journey.'"

#### Trade for Women.

It is a well-known fact that color-blindness is almost unknown among women. An Eastern paper suggests that one reason why they are so much superior to men in this respect is their habit of "matching" things. The utter imbecility of men in this business is generally admitted. The propriety of replacing our present locomotive engineers by females of keen and discriminating vision is suggested, thus avoiding the consequences of mistaking green for red signals, etc.—*Coach Painter*.

#### Elevated Railroad Mashers.

"How did you become acquainted with the man?" asked Justice Duffy of the complainant.

"I flirted with him from the window of my room when he passed up and down on his engine, and finally he called to see me," was the reply.

"That is just what I thought," said the Justice in a dis-

gusted tone. "So, young man," he continued, turning to the accused, "you are one of those intolerable nuisances called elevated railroad mashers!"

"Please excuse me, Your Honor. I only —"

"Don't talk to me, sir, about excuses. I see that kind of business every day on all the elevated roads. The 'mashers' have girls to look at and either wave their hands or handkerchiefs to on every block. Some of them pay a great deal more attention to that than they do to their business. If I were the superintendent of the roads, I would have detectives on the lookout and would discharge every man caught flirting. It seems very funny to me that as soon as a man gets a cap on his head and brass buttons on his clothes, be it the uniform of a policeman, railroad-man or horse-car conductor, he at once becomes a 'masher'; and the queerest part of it is that a great many foolish young women allow themselves to be approached by these fellows."

The Justice concluded by fining the masher \$10 and holding him in \$300 bail to keep the peace for three months.—*New York Herald*.

#### A Singular Accident.

A singular accident occurred on the New York, West Shore & Buffalo road near Newburg in a thunder shower on the evening of July 12. A signalman's shanty was struck by the storm and blown over upon the track, and a very few minutes afterward an express train struck the shanty, knocking it to pieces and fatally injuring the switchman. The time was so short that he was entirely unable to extricate himself from the wreck or to signal the train.

During the same storm the lightning struck a tool shanty near Cornwall and exploded several dynamite cartridges which had been left there. Nothing was left of the shanty but a pile of splinters.

#### Amending the Verdict.

The train was just entering Erie, Tenn. when we heard the sharp toot! toot! toot! of the whistle, and such passengers as looked from the window saw an aged African with a bundle over his shoulder, straight ahead of the track. The whistle was blown and the bell rung, but he paid no attention, and all of a sudden the cowcatcher picked him up and flung him 50 feet to one side. A gang of men brought the body to the depot, and among the dozen of us who stopped off at the village a coroner's jury was selected. It seemed a plain enough case. The man came to his death by being struck by a locomotive on the L. & N. road. Such was the verdict rendered, but no sooner was it announced than the coroner observed:

"Gentlemen, return and amend your verdict. You haven't said anything about carelessness."

We returned to the room and amended by adding that the engineer was blameless in the case, and the coroner received us with:

"Very good, gentlemen, as far as it goes, but the man was probably deaf, and it would be well to amend the verdict accordingly."

We went back and amended to make the victim as deaf as a hitching-post, but we were not through yet.

"You haven't got the name of the county in your report, and you don't say whether it was a freight or passenger train," observed the coroner.

We returned to the room for another tussle, and were just congratulating ourselves on having everything ship-shape when the coroner put his head into the doorway and called out:

"Gentlemen, amend your verdict! The confounded nigger has come to life!"

And when we rushed out to the freight-house he was sitting up on end and asking if anybody had seen his bundle.—*Detroit Free Press*.

#### Narrow-gauge Stories.

Said a German locomotive engineer to a reporter the other day: "My gracious, there was some of the worst runs on that narrow-gauge you ever see. Me and my fireman, when we got close to one we made our preparations. I set the throttle in the notch 'hat makes her run about six miles an hour, and then me an' my fireman we steps off. She's not so high, you know, and we steps off easy." "Well?" asked the reporter. "Well, if she went over that bad place, all right. Me and my fireman climbed up on the back side of the train, on the caboose, you call her, and we walked over the cars into the cab." "And supposing the train left the track?" "Oh, that was simple. You see, she wasn't so big or so high, and if she went into the ditch me and my fireman and the other boys, we just lifted her back on again and then she went all right until she got to the next bad place."

A travelling passenger agent of a Western road is authorized by the statement that during a recent trip over the Toledo Narrow-gauge the train was ditched 12 times in one run of 50 miles.

Many will be surprised to learn that the Toledo, Cincinnati & St. Louis is still running trains from East St. Louis. The time card now in force between here and Toledo calls for the completion of the trip in at most four days. There are three points where the passenger must lay over from 10 to 15 hours each between here and Toledo, namely, Charleston, Frankfort and Delphos, the delay at Frankfort being 20 hours. The through time between Toledo and St. Louis via the Wabash is 15 hours.—*St. Louis Globe-Democrat*.

#### Trials of a Ticket Agent.

More ticket agents would be found in heaven but for a certain class of visitors who come in and lead them into ways of profanity by their senseless and time-consuming questions. Instances like the following are common:

"Is this the Cincinnati Southern office?"

"Yes, sir."

"Your sign says Cincinnati, New Orleans, Texas & Pacific."

"That's the same thing."

"Then why do some of your advertisements say Queen & Crescent route?"

"Because the Queen of England's loyal subjects have a 20 years' lease on it."

"What's the fare to Chattanooga?"

"Ten dollars."

"Both ways?"

"No—one way."

"How much for the round trip?"

"Seventeen fifty."

"When does the next train go?"

"Eight ten."

"What time is it now?"

"Half-past four."

"Slow, ain't you? My watch says four."

"That's the standard time."

"What is?"

"Ours."

"Don't having three hands on your clock mix you?"

"No, sir."

"What did you say the fare was to Chattanooga?"

"Ten dollars."

"Suppose I was to take two tickets?"

"The price for each would be the same."

"How about five?"

"No difference."

"You have taken a good many people to Chicago, haven't you?"

"Our road don't run there."

"That's so," looking around the walls and drumming on the counter with one hand. "What's the fare from Ocala to Leesburg?"

The tired agent wades through the railroad guide, and after infinite search finds the towns named to be on an obscure Florida road, and figuring on the distance at three cents a mile, replies, "About ninety cents."

"How long would it take to get there if I leave to-night?"

Using up a couple of pencils and a ream or so of paper, after hunting up all the railroads and their connections, together with the stage lines and boat transfers, the agent says: "Friday night at 11 o'clock."

"What would it cost altogether from here to Leesburg, sleeping car and meals together?"

More figuring and another estimate is made.

"That's a good deal, ain't it? Where's the opposition ticket office?"

The agent removes a revolver from his hip pocket to a shelf under the counter. The weapon is a self-cocker, with stop and fly-back trigger, timed to a sixteenth of a second.

"Were you going to start to-night?" says the agent.

"Well, no. I was thinking that if business keeps up through the summer I might go in the fall to see some of my wife's kin."

The man leaves, and the agent, locking up the door, goes out the back way to a dispenser of liquids, where he takes four fingers and a thumb of bourbon, with a dash of benedictine as a nerve restorer. Agents get bald soon and die early.—*Cincinnati Enquirer*.

#### Train-Wreckers in Mexico.

The advent of Diaz to the Presidential chair is hailed with delight by the entire population of Mexico—natives and foreigners alike. The programme set forth by the future President exhibits a vast series of reforms which will greatly tend to make the country a safe and profitable one for the investment of foreign enterprise. The Mexican tariff is to be thoroughly revised, and the influx and efflux of money will be unhampered by the duties now on them. The railroads and telegraphs will have due attention given them, and the system of brigandage now so widely practiced to the great detriment of travel, will be entirely wiped out. Apropos of train wreckage, I may as well give my personal experience on one of the wrecked trains to show the determined character of the lawless wreckers on the Mexican Central and other roads traversing the territory. While en route to the city of Mexico, and within about 10 or 11 hours' run of our destination, at a place a little above Queretaro city, and between 8 and 9 o'clock at night, a sudden shock was felt on board the express train, the cars overturned and a number of rifle and pistol shots were heard in rapid succession. The train had been going at about 22 or 23 miles an hour when the shock was experienced, and all the occupants of the cars felt assured that train-wreckers were on the alert. I was violently thrown from my seat on the left-hand side of the Pullman car, and as the car turned a complete side somersault I was precipitated from the opposite window and landed in a ditch of soft mud, fortunately sustaining no other injury than that of soiling my clothes and losing my watch in the mud. I, however, had a narrow escape from losing my life through being shot, as, when I landed in the mud, and had barely risen to my feet, a full-bearded desperado presented a pistol to my face, the cold muzzle touching my forehead, and this contact, cold and sudden as it was, coupled with the dimly discernible determined visage in front of me, made me feel anything but pleasant. In less time than it takes to tell it, I raised my head, drew it back and slightly to the right, when the pistol exploded alongside of my left cheek, the powder burning the side of my face.

I knew that I had my revolver in my little satchel which I kept slung over my shoulder and hanging at my side, and I instinctively felt for it there. I had just got it out of the satchel and cocked it as the desperado presented arms again. I raised my hand to fire on him, but before I could get sufficient elevation my arm was struck down and the pistol exploded prematurely, and my enemy received the ball in his hip, causing him to fall to the ground in great agony. He leveled another shot, which I succeeded in dodging, when the *rurales*, or native police, came upon the scene and arrested and disarmed him. During this time some 20 or 30 shots were exchanged, and no less than 13 persons were killed, 11 of whom were Americans. The engineer and fireman were both seriously wounded, but the conductor escaped with a few bruises. Eight of the train-wreckers were captured on the spot, and from what was gathered afterward, 14 in all comprised the gang. The eight men, including my wounded adversary, were taken to Queretaro and shot the following evening. The ditched cars and engine were replaced on the track the next day at daylight by means of a gang of laborers brought on by the construction train which had been telegraphed for. Four more of the wreckers were caught the next day about 16 miles from Queretaro by the *rurales*, and they shared the same fate as their confreres, only in a different way and more summary manner. The fate of these four men was singular, to say the least, and though their punishment was well merited, it was executed in a peculiar manner.

The *rurales*, having captured their prisoners at a considerable distance from the town, knew that they would have a long journey before them, and that, when they reached the town, they would have to remain several days before the trial and identification of their prisoners took place, proposed to their prisoners, as they were unobserved, to go leg bail and skip, or, in other words, to escape. The prisoners, nothing loath to regain their liberty, made double-quick tracks for the woods, shouting merrily at their escape from duress vile. Their hilarity, alas for them, was premature, for hardly had they gone a dozen paces when the *rurales* leveled their Winchester repeating rifles and sent death messengers through the bodies of the would-be runaways, killing them on the spot. The *rurales* then took the dead bodies and brought them into Queretaro, stating to the authorities that they had to shoot their prisoners in order to prevent their escape, and pointed to the bullet holes in their backs in verification of their statement. This is no romance, but an actual fact. Gen. Diaz proposes to have train-wrecking episodes, such as I have just related, matters of very rare occurrence, and what with these and other reforms of a like nature, foreign powers, and the United States in particular, will have occasion to bless the day that once more placed Porfirio Diaz in the Presidential chair of Mexico.—*Correspondence San Francisco Alta*.

#### TECHNICAL.

##### Railroads in the Argentine Republic.

The Buenos Ayres *Standard* of May 23 says: "The great event of the past fortnight has been the completion of the Andine Railway to Mendoza, capital of the province of that name and lying at the foot of the Andes. The importance of this great event cannot be exaggerated; the line, we may say, crosses the continent, stretching from the Parana to the Cordillera. A zone of immense natural wealth is thus thrown open by this quick means of communication, and the



traffic on the line promises to be very large. Mendoza is one of the richest provinces of the Republic; it covers an area of about 5,000 square leagues of land at the foot of the Andes, with a population estimated at 150,000 souls. The rivers Mendoza, Tunuyan, Desaguadero, Diamante and Atuel irrigate over 1,000 square leagues of land, and the soil is so bountiful that the yield is often a hundred-fold. A very active trade is carried on in the export of fat cattle to Chili, but the great industry of the present and future is viticulture. The Mendoza wines are well known; the production is doubling every two years. The great drawback of the past—onerous and difficult means of communication—is now removed, and we may look forward to a great development of all the industries of the province. The mineral wealth of the province also is beyond calculation."

#### Electric Lights for Coast Service.

The first electric light that has ever been tried in this country for lighthouse purposes is in use near Tompkinsville, Staten Island. It is situated in an iron tower, built for the purpose under the direction of Gen. J. C. Duane and Lieut. John Mills, who are experimenting on behalf of the Light-house Board to see whether it will be practicable to employ the electric light for the better protection of vessels approaching the coast. Better results will have to be reached than have been attained so far before it will be feasible to supply all with electricity in the general coast service. The great difficulty with the electric light in coast use is its tendency to flicker, and thus confuse the mariner.—*New York Times.*

#### ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the *Railroad Gazette*:

Page.	Page.
Atchafalaya, Top, & Santa Fe, 64, 319	Missouri, Kansas & Texas, 337
Baltimore & Potomac, 445	Missouri Pacific, 336
Boston, Concord & Montreal, 411	Mobile & Ohio, 515
Camden & Atlantic, 185	Montpelier & Wells River, 445
Canadian Pacific, 519	New Haven & Northampton, 147
Carolina Central, 393	N. Y. Chicago & St. Louis, 370
Central Pacific, 337	N. Y. & Greenwood Lake, 494
Charlotte, Col. & Augusta, 332	N. Y. Lake Erie & Western, 281
Chattanooga, 410	N. Y. N. Haven & Hartford, 27
Chesapeake & Ohio, 374	N. Y. Ontario & Western, 103
Chesapeake & Ohio Canal, 445	N. Y. Pennsylvania & Ohio, 139
Chicago & Alton, 445	N. Y. Susquehanna & West, 147
Chi. Burlington & Quincy, 328	Norfolk & Western, 350
Chi. Milwaukee & St. Paul, 374	Northern Central, 165
Chi. Rock Island & Pac., 445, 511	North-n. (New Hampshire), 411
Chi. St. Louis & Pittsburgh, 293	Pennsylvania & New York, 147
Chi. St. Paul, Minn. & Omaha, 373	Pennsylvania Railroad, 181
Cin. & Muskingum Valley, 410	Peoria, Decatur & Evansville, 519
Cin. New Orleans & Tex. Pa., 104	Perkiomen, 87
Cin. Wash. & Baltimore, 445	Petersburg, 47
Cleveland, Col. Cin. & Ind., 378	Philadelphia & Reading, 27, 64
Cleve. Lorain & Wheeling, 512	Philadelphia, Wm. & Balt., 106
Columbia & Greenville, 37	Pittsburgh & Castle Shannon, 164
Columbus, Hocking V. & Tol., 202	Pittsburgh, Cin. & St. Louis, 41
Concord, 393	Pittsburgh & Lake Erie, 4
Connecticut River, 64	Pittsburgh, McK. & Young, 4
Consolidation Coal Co., 291	Pittsburgh, Wheeling & Ky., 410
Cumberland & Maryland, 359	Portland & Ogdensburg, 87
Dela. & Hud. Canal Co., 149, 249	Portland & Kennebec, 87
Delaware, Lacka. & Western, 165	Providence & Worcester, 64
Denver & N. Grande, 390	Richmond & Danville, 23
Eastern R. R. Association, 351	Rochester & Pittsburgh, 241
Eliz. Lexington & Big Sandy, 373	Rome, Water & Ogdensburg, 427
Fitchburg, 47	St. Iron Mountain & So., 337
Grand Trunk, 378	St. L. & S. n. Francisco, 297
Han. Junc. & Gettysburg, 427	St. Louis, Vandalia & T. H., 108
Hartford & Conn. Western, 165	St. Paul & Duluth, 147
Housatonic, 186	Savannah, Florida & Western, 336
Houston & Texas Central, 321	Seaboard & Roanoke, 369
Huntingdon & Broad Top Mt., 107	Shenandoah & Allegheny, 336
Illinois Central, 328	South Carolina, 107
Indiana, Bloom. & West, 519	Terre Haute & Indianapolis, 494
International & Gt. Northern, 337	Terre Haute & Logansport, 494
Kansas City, Ft. Scott & Gulf, 510	Texas & Pacific, 198, 337
Kentucky Central, 378	Toledo & Lorain, 410
Knox & Lincoln, 378	Troy & Greenfield, 46
Lake Shore & Mich. Southern, 358	Union Pacific, 195, 202
Lehigh Coal and Navigation Co., 147	Utica & Black River, 27
Lehigh Valley, 47, 130	Vermont Valley, 107
Little Miami, 410	Wabash, St. L. & Pacific, 337
Little Rock & Fort Smith, 463	Western Maryland, 8
Louisville, Evans & St. L., 512	West Jersey, 87
Marquette, Houghton & Ont., 378	West Va. Central & Pittsburgh, 46
Mexican Central, 378	Wilmington, Col. & Augusta, 9
Michigan Central, 378	Wilmington & Walden, 9
Milwaukee, Lake Sh. & West, 379	York & Peachbottom, 411
Mississippi & Tennessee, 8	

#### New York & Long Branch.

This company owns a line from Port Amboy, N. J., to Bay Head Junction, 38 miles. It owns no equipment, the road being worked jointly by the Philadelphia & Reading (as lessee of the New Jersey Central) and the Pennsylvania Railroad Co. under an agreement by which both companies run their own trains over the road. The following statements are from the report to the Comptroller of New Jersey for the year 1883, the first full year for which separate statements have been made for this road.

Stock, 1,500,000	\$2,000,000
Bonds, 1,500,000	1,500,000
Floating debt, 20,215	20,215
Total, 3,520,215	\$3,520,215
Cost of road, 3,300,720	
Balance, 219,495	

The cost of road reported is \$87,099 per mile of road. The bonds are guaranteed jointly by the Central Railroad Co. of New Jersey and the Pennsylvania Railroad Co., and were issued to complete extensions and improve the road.

The earnings last year were as follows, no comparison being possible, as the report for 1882 covered the operations for nine months only:

Passengers, 423,774	\$423,774
Freight, 108,004	108,004
Other sources, 12,612	12,612

Total earnings (\$14.326 per mile)	\$744,390
Expenses (106.50 per cent.)	579,773

Deficit for the year, \$35,383

Interest on the bonds was \$90,000 and dividends amounting to \$35,000 (1% per cent.) were paid, increasing the deficit to \$160,383 for the year. Part of this apparent deficit was probably due to the system of accounts. There has been a long litigation over the joint contract which was recently closed by a new compromise agreement.

#### Delaware, Lackawanna & Western Leased Lines.

The following statements of the operations of the lines in New Jersey leased by the Delaware, Lackawanna & Western Co. are from the reports made to the State Comptroller of New Jersey, for the year ending Dec. 31.

#### MORRIS & ESSEX.

The lines worked under this road are as follows:

Main line, Hoboken to Phillipsburg, 83.08	Miles.
Bonnton Branch, loop from Bergen Tunnel to Denville, 34.54	
Newark & Bloomfield, leased, Roseville to Montclair, 4.25	
Passaic & Delaware, leased, West Summit to Bernardsville, 14.01	
Chester R. R., leased, Chester Junction to Chester, 10.08	
Total worked, 145.91	

The total mileage owned is 118.22 miles, nearly all double track.

The stock, bonds, etc., are as follows:

Stock (\$129,882 per mile), 118.22	\$15,000,000
Bonds (\$195,170 per mile), 118.22	23,073,000
Total, 38,073,000	
Cost of road (\$205,000 per mile), 118.22	\$24,235,077
Cost of the equipment (\$109,769 per mile), 118.22	12,976,695
Balance, 861,258	
Total, 38,073,000	

The bonded debt was increased by \$580,000. Cost of road increased \$334,603 and cost of equipment \$265,581 during the year. The cost of road includes extensive and valuable terminal facilities at Hoboken, provided on a scale sufficient for the traffic of the whole Lackawanna system. The road does an enormous suburban business, requiring a large and costly passenger equipment.

The earnings for the year were as follows:

1883.	1882.	Inc. or Dec.	P. c.
Freight, 2,933,399	2,876,663	I.	56,736 2.0
Passengers, 1,298,800	1,162,577	I.	136,223 11.7
Other sources, 260,132	223,711	I.	42,421 18.9
Total, 4,492,331	4,262,951	I.	229,380 5.5
Expenses, 2,037,113	2,631,941	I.	305,172 11.6

Net earnings, \$1,561,218	\$1,630,980	D.	69,762 4.3
Gross earn. per mile, 30,703	29,096	I.	1,607 5.5
Net earn. per mile, 10,656	11,132	D.	476 4.3
Per cent. of expenses, 65.20	61.74	I.	3.55

The net earnings show a surplus of only \$9,524 over the interest and rental charges on the basis stated below. The decrease in net earnings was due to the large increase in expenses entirely.

No income account is given, but the payments required from the lessee would be as follows, allowing interest for one-half the year only on the increase in the bonded debt:

Net earnings as above, \$1,561,218	
Interest on bonds, \$1,532,910	
Rental, Chester R. R., 7,000	
Newark & Bloomfield, 6,231	
Passaic & Delaware, 5,553	
Dividends, 7 per cent., 1,050,000	
Total, \$2,601,694	

Loss to lessee for the year, \$1,140,475

On the same basis the loss to the lessee was \$950,734 in 1883 and \$851,014 in 1882. Part of this loss, however, is returned to the lessee in the form of interest or dividends on securities owned.

#### WARREN.

This road extends from Hampton Junction northwest to the Delaware River, 18.25 miles, and forms part of the lessee's main line. It is all double track.

The stock, bonds, etc., are as follows:

Stock, 1,800,000	\$1,800,000
Bonds, 1,350,000	1,350,000
Floating debt, 31,410	31,410
Total, 3,181,410	
Cost of road, 3,181,410	

There was no change in stock or bonds. Cost of road increased by \$18,240 during the year; it is now \$174,324 per mile of road.

The earnings for the year were as follows:

1883.	1882.	Inc. or Dec.	P. c.
Freight, \$412,619	\$465,138	I.	\$7,481 1.6
Passengers, 47,718	39,080	I.	7,778 19.4
Other sources, 53,868	36,807	I.	16,990 45.9
Total, \$514,243	\$441,085	I.	\$73,158 16.6
Expenses, 280,354	226,791	I.	53,563 23.6

Net earnings, \$233,889	\$254,144	D.	\$20,255 8.0
Gross earn. per mile, 28,116	26,410	I.	1,706 6.7
Net, 12,816	13,983	D.	1,167 8.3
Per cent. of exps., 54.52	47.05	I.	7.47

The gross earnings show a considerable increase, but the expenses increased still more, leaving a decrease in net earnings. Payments by the lessee were as follows:

Net earnings as above, \$233,889	
Interest, 94,500	
Taxes, 15,750	
Dividends (7 per cent.), 126,000	
Total, 236,250	

Total deficit for the year, \$2,361

The deficit is very small; in fact this road has usually earned a considerable surplus for the lessee.

#### SUSSEX.

The Delaware, Lackawanna & Western Co. does not lease this road, but owns nearly all the stock, and operates it.

The road extends from Waterloo, N. J., to Franklin Furnace, 24.10 miles, with a branch to Branchville, 6.21 miles, making 30.31 miles in all.

The stock, bonds, etc., are as follows:

Stock, 1,638,000	\$1,638,000
Bonds, 236,500	236,500
Floating debt, 74.5	74.5
Total, 1,882,505	
Cost of road and equipment, 1,911,429	

There was no change in stock or bonds during the year; cost of road and equipment was increased by \$31,822.

The earnings for the year were as follows:

1883.	1882.	Inc. or Dec.	P. c.
Freight, \$53,579	\$75,089	D.	\$21,510 28.3
Passengers, 21,385	26,141	D.	4,756 18.3
Other sources, 22,637	24,461	D.	1,824 7.4
Total, \$97,901	\$125,691	D.	\$27,790 22.1
Expenses, 102,640	89,848	I.	12,792 14.2

Net or deficit, D. \$4,379	N. \$35,843		
Gross earn. per mile, 3,230	4,147	D.	\$917 22.1
Net, 1,814	1,183	I.	631 34.8
Per cent. of exps., 104.84	71.48	I.	33.36

Interest on the bonds was \$16,555, increasing the deficit to \$21,294 for the year. Extensive improvements to road and equipment were made. The business of the road has been diminished by the building of new roads in the district which it serves.

#### Cincinnati, Hamilton & Dayton.

This company owned and operated the following lines during its last fiscal year, ending March 31, 1884:

Main line owned, Cincinnati to Dayton, O., 39.9	Miles.
Dayton & Michigan, leased, Dayton to Toledo, 142.1	
Cin. Hamilton & Indianapolis, owned, Hamilton, O., to Indianapolis, 98.9	
Cin. Richmond & Chicago, leased, Hamilton, O., to Richmond, Ind., 44.0	
McComb, Deshler & Toledo, operated, 8.9	
Total, 353.8	

There are 27.8 miles of second track and 80.8 miles of sidings, making a total of 461.9 miles of track.

The equipment consists of 90 locomotives; 70 passenger and 23 baggage cars; 1,503 box, 178 stock, 514 flat, 516 coal and 81 caboose cars; 5 wrecking cars.

The general account is as follows, condensed:

Common stock, 3,500,000.00	\$3,500,000.00
Preferred stock, 450,000.00	450,000.00
Funded debt, 2,450,000.00	2,450,000.00
Accounts and balances, 875,072.66	875,072.66
Surplus earnings, 2,148,353.69	2,148,353.69

Total, 9,853,026.35	
Road and equipment, 5,900,105.87	
Stocks and bonds, 961,197.76	
Leased lines, 2,114,046.99	
Materials and balances, 213,351.85	
Accounts and balances, 406,613.15	
Cash and cash items, 257,810.75	

The funded debt consists of \$450,000 second-mortgage bonds, now a first lien, and \$2,430,000 consolidated bonds, of which \$996,000 are 7 per cent. and \$1,434,000 are 6 per cent. bonds. During the year \$15,000 second-mortgage and \$13,000 consolidated bonds were retired, and there was \$101,100 preferred stock sold.

The accounts of the leased lines are as follows:

	Dayton & Mich. & Chi.	Cin. Rich. & Chi.	Cin. Ham.
Common stock, 2,403,100	\$2,403,100		
Preferred stock, 1,211,250	1,211,250		
Funded debt, 2,728,300	2,728,300		
Accounts, etc., 784,496	784,496		
Total, \$7,127,146	\$7,127,146	\$1,179,770	\$3,980,375

The accounts and balances, outside of stock and bonds, are chiefly balances due the lessee for improvements and advances made.

The traffic for the year was as follows:

1883-84.	1882-83.	Inc. or Dec.	P. c.
Passenger car miles, 4,408,776	4,047,599	I.	421,177 10.4
Freight car miles, 21,329,896	21,428,572	D.	98,706 0.5
Passengers carried, 2,092,961	1,817,438	I.	275,523 15.2
Passenger miles, 48,178,865	45,057,054	I.	3,121,811 6.9
Tons freight carried, 2,681,861	1,872,474	I.	809,387 43.2
Ton-miles, 166,373,374	162,588,459	I.	3,784,915 2.3

Av. Rate:

Per pass.-mile, 2.252 cts.	2.305 cts.	D.	0.053 ct. 2.3
Per ton-mile, 1.065 "	1.141 "	D.	0.076 " 6.7

Of the freight car mileage last year 79.5 per cent. was of loaded cars, against 77.9 per cent. in the preceding year.

The earnings for the year were as follows:

1883-84.	1882-83.	Inc. or Dec.	P. c.
Freight, \$1,772,569	\$1,859,796	D.	\$87,227 4.7
Passengers, 1,085,147	1,038,536	I.	46,611 4.5
Mail and express, 94,574	96,687	D.	2,113 2.2
Miscellaneous, 90,171	93,388	D.	3,217 3.5

Total, \$3,042,461	\$3,088,407	D.	\$45,946 1.5
Expenses, 1,994,767	2,014,907	D.	20,140 1.0

Net earnings, \$1,047,694	\$1,073,500	D.	\$25,806 2.4
Gross earn. per mile, 8,596	8,729	D.	130 1.5
Net, 2,961	3,034	D.	73 2.4
Per cent. of exps., 65.56	65.24	I.	0.32

The increase in the proportion of expenses to earnings was due chiefly to the increased traffic carried at lower rates last year.

The result on the several lines was as follows:

Dayton & Mich.....	1,131,208	962,218	P.	161,990
Cin., Rich. & Chi.....	247,912	204,845	P.	43,067
Cin., Ham. & Ind.....	457,291	573,892	L.	116,601
McComb, Desh. & Tol..	6,460	9,557	L.	3,097
Total .....	\$3,042,461	\$2,758,229	P.	\$284,232





Published Every Friday.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## Fluctuations of American Railroad Stocks.

After a continuous but not very rapid downward movement in the prices of American railroad shares for two and a half years, from the middle of 1881 to the end of 1883, there has been a rapid further fall in the last half-year, and investors in this kind of property have seen its value dwindle at a painful rate in the past three years, so much so that in most cases of dividend-paying stocks if they had been sold July 1, 1881, and the proceeds locked up without use, the sum would now exceed the present market value by more than the amount of dividends paid. In by far the larger number of cases the man who invested in choice railroad stocks July 1, 1881, is poorer now than if he had left his money idle and drawn on the principal of it for the dividends which the stocks have paid.

Some examples from stocks sold on the New York Stock Exchange will illustrate:

	Price	Divi-
	June '81. June 30, '84. Decline. paid.	
Canada Southern.....	79 28 51	4
Central of N. J.....	104 59 45	18
Central Pacific.....	102 33 69	24
Chicago & Alton.....	147 120 27	24
Chic. & Burlington.....	171 111 60	21
Chic. & St. P.....	129 63 66	21
do. preferred.....	135 100 35	21
Chic. & Northwestern.....	132 87 45	20
do. preferred.....	144 121 23	23
Chic. & Rock Island & Pac.....	140 104 36	21
C. St. P. Minn. & Om. pr.....	108 84 24	21
Del., Lack. & West.....	112 73 39	24
Denver & Rio Grande.....	113 73 40	6
Illinois Central.....	145 114 31	136
Lake Shore & Mich. South.....	134 74 59	24
Louisville & Nashville.....	109 26 83	9
Michigan Central.....	114 54 60	104
Missouri Pacific.....	114 97 17	18
New York Central.....	151 99 52	24
Erie preferred.....	91 25 65	18
N. Y. & New England.....	84 94 74	13
N. Y., New Haven & Hart.....	190 177 13	30
Ohio & Miss. pref.....	119 45 74	18
Reading.....	62 25 36	24
Pitts. Ft. Wayne & Chic.....	141 120 21	21
St. L. Alt. & T. H. pref.....	88 75 23	21
St. P., Minn. & Man.....	100 85 15	24
Union Pacific.....	130 33 97	104
Wabash.....	60 5 54	18
Wabash preferred.....	96 12 84	18
Western Union.....	94 57 36	104
Del. & Hudson.....	113 92 21	21
Oregon Ry. & Nav.....	188 69 108	26

\* Also the right to subscribe for one-fifth of the holdings at 50¢ a right worth \$2.50 per share now.

\* Including a dividend of 17 per cent. in Chicago, St. Louis & New Orleans stock worth 80.

We have omitted most of the non-dividend-paying shares from this list, which have generally declined more in proportion than the dividend-paying shares, though the examples that we give—New York and New England, Wabash common, and Denver & Rio Grande, are perhaps the worst on the list, having fallen 89, 92 and 93 per cent., respectively.

We find but six stocks which have paid dividends since June, 1881, in amount equal to the decline in their market price—the Delaware, Lackawanna & Western, the Illinois Central, the Missouri Pacific, the New York, New Haven & Hartford, the Manitoba and the Delaware & Hudson. If we should include the New England railroads, the stocks of which are not sold on the New York Exchange, we should find several more, doubtless, but the aggregate of the shares would not be a very large amount, the companies there being small; and aside from these the Pennsylvania is the only great dividend-paying company, and its \$50 shares have fallen about 18 and paid 12½ in the last three years.

This is a most unsatisfactory experience for investors who bought in 1881, and it is unsatisfactory to those who bought only stocks that have maintained their rate of dividend as well as to others. The man who invested a capital of \$20,000 in Chicago & Alton, for instance, has received 8 per cent. dividends regularly, and sees no sign of their decreasing, but the property for which he paid \$20,000 is now (or was June 30) worth but \$16,340. If he bought Chicago, Burlington & Quincy, Rock Island, Northwestern, St. Paul, Lake Shore, New York Central or Union Pacific, he has fared much worse. One might suppose that shares selling above 125 would be reasonably safe if they were not paying a high rate of interest on their cost. Not one of the stocks that brought as much as that price in 1881 were then paying as much as 6 per cent. on the purchase price, which therefore could have been warranted only by great confidence in the stability of the price or expectation of an increase in the dividends. In some cases there has been an increase in the rate of dividend, and in others stock privileges, supposed at the time to be of great value, but generally worth nothing at present prices.

If three years ago a man had invested his fortune in such stocks as New York Central, Rock Island, Chicago, Burlington & Quincy, Chicago & Alton, Chicago, Northwestern preferred, St. Paul preferred, Illinois Central, Lake Shore, Fort Wayne, and Union Pacific, he would have been thought to be remarkably cautious. But a purchase of 100 shares each of these ten stocks would have cost \$144,525, and at the end of June last would have been worth but \$99,775, having paid \$23,960 in dividends. The average interest received on the purchase price would have been about 5½ per cent., but the principal available on realization would have fallen off \$44,750, or no less than 31 per cent.

If this is the result of exceptionally cautious investments in railroad shares, the investor is likely to conclude that the only safe policy is to let such property alone. Unfortunately for him, he is apt to come to this conclusion only when prices are very low, and forget it when they have been advancing rapidly for a few years.

For if we go back a few years previous to 1881 we shall find that the advance in many cases had been greater than the decline has been since. Prices were lowest generally in 1877, four years before the time for which we have quoted high prices; but three years before, in June, 1878, when many of them had advanced greatly, they were still for the most part lower than now. Thus the highest prices in that month were Chicago & Alton, 81½; Chicago, Burlington & Quincy, 108; Milwaukee & St. Paul, 54½ for common and 82 for preferred; Northwestern, 54½ for common and 77½ for preferred; Rock Island, 119½ for what is now two shares; Illinois Central, 85½; Lake Shore, 65½; New York Central, 112; Fort Wayne, 98; Union Pacific, 70. Of these only New York Central and Union Pacific are lower now than they were then.

Are we to conclude, then, that the estimates of value of railroad shares, as shown by the prices, were reasonably accurate in 1878 and 1884 and grossly exaggerated in 1881? Neither. The only thing we can safely conclude is that the prices fluctuate greatly, which is shown as well by their going up after 1877 as by their going down after 1881. These fluctuations are governed partly by fluctuating conditions actually affecting values, but also and largely by hopes and fears and the condition of the money market. The railroad stocks of the country are to a very great extent the temporary investment of the floating capital of the country. Not that a business man who has a few thousands of dollars to spare for a month or two buys stocks with it—he would be most unlikely to do that; but that the bank in which he deposits remits its surplus to a New York bank, which lends it on stock collateral. An immense proportion of all the stocks in the country is held by people who have paid their own money for but a small part of the cost, and have borrowed the balance from the banks. The effect of this is that

purchases are made in large quantities by small capitalists, a very large proportion of whom pay but little attention to the inherent value of the stocks which they buy, but a great deal to the prospect for an advance. That is, they buy for speculation and not for investment. Thousands pay prices which they fully believe are more than the stocks are worth and will not be maintained a year, simply because the price has been advancing, and the indications, to them, are that the advance will continue for a while longer. Thus the highest prices are not fixed by the best judgment of intelligent investors, and often go far above what they would bring if only such investors bought them; the more so because in such times capital is accumulating rapidly in the hands of persons who have no experience either in investing or in speculating.

Now when hard times come precisely the contrary takes place. The accumulations of capital are small, and therefore the demand for investments is small also. The decline in prices makes the best informed investors afraid to buy what they know to be cheap at the price, because the prospect is that the price will go lower still; and the vast majority of ill-informed investors cease to have faith in anything. The small army of speculators take their cue from the temper of the public, and will not buy on a falling market. Then there is very much less capital at the command of speculators, for if it is abundant, as at present, the banks are exceptionally cautious, having recently seen the value of their collaterals melt away between two days with fearful rapidity. Thus when the actual value of shares has decreased a little the market value may decrease a great deal, and stocks sell for much less than they are worth, as in prosperous times they sold for much more than they were worth.

This is not the only country that has railroad shares and stock exchanges, however, while it is the only one in which such great fluctuations in prices are common, and in England and other countries where there is capital to invest abroad the exceptional fluctuations here bring our stocks into discredit and prevent immense investments in these shares by English capital, and indirectly, no doubt, permanently keep down the prices of all our railroad securities and virtually increase the average rate of interest which this country has to pay on the capital invested in its railroads.

But there are good and bad times in Europe as well as in America, and prices are not entirely stable there. A table of the prices of 30 leading English and Scotch railroad securities shows that all but one fell in price during the half-year ending with June last, and some largely—that is, largely for English stocks. Thus, the changes in prices of some of the stocks have been:

	from	to	Decline
Caledonian.....	104	92½	11½
Great Northern.....	115	109½	5½
Great Northern "A".....	110½	99	11½
Great Western.....	145½	137½	8
London & Brighton.....	120	114	6
London & Brighton "A".....	106½	94	12½
London, Chatham & Dover.....	23½	18½	5
London, Chat. & Dover pref.....	102½	97½	5
London & Northwestern.....	173½	163½	10
Manchester & Sheffield.....	83½	79	4½
Manchester & Sheffield "A".....	46	34½	11½
Midland.....	134½	131	3½
North British.....	106	93½	12½
Edinburgh & Glasgow.....	42½	34½	8
Northeastern.....	172	161½	10½
Southeastern.....	123½	124	½
Southeastern "A".....	110	97½	12½
Taff Vale.....	290	277	13

\* Advance.

Several of the other declines are trifling, as 8½ by the Great Eastern, 2½ by the Lancashire and Yorkshire, 1½ by the London & Southwestern, 3½ by the Metropolitan, and there was an advance of 5 in Metropolitan District preferences.

Shares in Indian railroads in most cases advanced somewhat from January to June. South American railroad shares held in London declined generally, but not much—Buenos Ayres Great Southern, from 173 to 168; Central Argentine, from 158 to 153; East Argentine, from 20 to 18. The one great decline, aside from our railroad shares, is in those of the Mexican Railway, the ordinary shares having fallen from 61 to 35, and the first preference 8 per cent. from 116 to 92½; the ordinary having been 118 a year ago.

Now compare these with the fluctuations in the prices of some of the stocks of best reputation in this country:

	from	to	Decline.
Chicago & Alton.....	140	120	20
Chicago, Burl. & Quincy.....	127½	109	18½
Chi. & Northwestern.....	124	87	37
do. preferred.....	149	129	20
Chic. & St. Paul.....	94	63	31
do. preferred.....	119	100	19
Illinois Central.....	140	111	29
New York Central.....	122	95½	27½

Thus comparing even the American stocks which have declined least with the English stocks that have declined most, we find the latter decidedly the more stable. Pennsylvania, Chicago, Burlington & Quincy, Boston & Albany, Rock Island and New York Central do not fluctuate as much as Wabash, Union Pacific,



Milwaukee & St. Paul, Louisville & Nashville and Denver & Rio Grande, but much more than English second-class stocks even.

What is the cause of the exceptionally great fluctuations in the prices of American stocks? In these times the causes of the great fall are often discussed, and after giving some weight to the change in the conditions giving actual value to the stocks, the conclusion usual is that faulty and dishonest management have caused a great distrust in railroads. This is an explanation that does not explain, however. Faults in management are numerous enough. The prospective value of enterprises, especially new ones, is systematically exaggerated, and reports are sometimes manipulated to show a better condition than actually exists; but this is not true of all companies, and of comparatively few of those which we have mentioned, which include those of the best reputation and exclude many which have not a good reputation, because the purpose was to include such lines as had for some time paid dividends. The shares of our best companies, we see, have fallen much more than those of the worst English companies.

Now the reputation of American railroad management was quite as bad in 1881 as it is now. Quite as many unscrupulous manipulators were in control, and most of them made their bad reputations before that time, and have found it to their interest to try to improve the value of the shares of the companies they control since. Perhaps people distrust them more now, when prices have gone down in spite of them, than they did then, when the high prices were partly due to their efforts; but it is doubtful if investors had any better opinion of American corporation management in 1881 than they have now, though some of them, having seen the prices of their securities double or treble, may then have looked with leniency, if not with trust, on those who helped on the advance. This is a cause why prices are lower than they might be with a more uniformly trustworthy management, but it is not a cause of the fall since 1881, with nearly all the stocks we have mentioned.

The causes connected with speculation and the way stocks are held in this country we have already discussed; but there are causes of fluctuations in actual value in this country greater than elsewhere. The rapid growth of the country is itself a cause. This growth is not constant any more than the slower growth of older countries. There are times when production and industry substantially stand still, and times when they progress by leaps and bounds. The difference between a time of stagnation and one after two or three years of great growth is immense, such as never is seen in an old country, because in no old country do we see such an increase as that from a production of 2,310,000 tons of pig-iron in 1878 to 4,144,000 in 1881 and 4,623,000 in 1882; or as that from 3,630 millions of feet of lumber in 1878 to 6,769 in 1881 and 7,552 in 1882; or from the construction of 2,700 miles of railroad in 1878 to 11,600 in 1882. After such tremendous growth has gone on for a short time all the productive agencies and all the carriers of the country are taxed to the utmost to supply the demand, which means that they are then able to make extraordinary profits. This leads to a multiplication of factories and railroads, and by the time the rapid growth ceases the country is likely to be over-supplied with these, with the consequence that profits fall below the average.

The fact is that we are engaged in providing a growing country with the industrial appliances it needs—railroads among them—and this is a work which cannot be done with exactness—fast enough, and not too fast—even when carefully planned beforehand. Here it can hardly be said to be planned at all. Any man or set of men who can raise money can build a railroad almost anywhere in the country. In Europe, India or Australia it is substantially impossible to get authority to duplicate a road. Here a new railroad may be built alongside of an old one and take away a large part of its traffic without legal check, and a territory which is able to support the thousand miles it has may within a few years have two or three thousand miles to support—or starve.

Further, most railroad companies, and especially Western companies, have to meet the problem of providing transportation for the growing country adjacent to their lines, not only by adding to their rolling stock but by constructing new lines of railroad. It will not do for them to stand still. If they do rival roads will occupy the territory which supports them. When the time comes that this adjacent territory begins to grow rapidly some one is sure to supply it with railroads, and it is sure when grown to afford a good support to a reasonable number of railroads. The companies whose lines are nearest, and whose

lines already built will carry the traffic of the new country, are naturally to secure as much of it as possible. But no one of them can be sure what its rivals will do, and lines are sometimes duplicated in a territory almost before it has any population, as in the James River Valley in Dakota and elsewhere. Neither can the most sagacious man judge accurately as to the rate of growth of a new country. It may stop growing suddenly, and leave its railroads with inadequate support, as Southwestern Minnesota and Northwestern Iowa did after 1871.

This may help to explain why there are greater fluctuations here than elsewhere in the prices of even the most carefully managed and most stable railroad properties of this country. Of those enterprises, which are only too numerous, which were organized for the purpose of enabling their promoters to sell the largest possible amount of bonds and shares at the highest possible prices, with but remote reference to their eventual ability to earn interest and dividends, no explanation of the great decline in their securities is needed. But even they are possible only because this is a country of very rapid growth, in which not infrequently improbable prophecies of prosperity come true.

#### Course of Rates and Traffic on the Chicago, Rock Island & Pacific.

The course of freight rates on the Chicago, Rock Island & Pacific Railway was steadily and for the most part rapidly downward from 1871 to 1880 (from 2.64 to 1.21 cents per ton per mile), but then there was an arrest in the downward course and an increase for two years from 1.21 to 1.28 cents, which was enough to make a difference of \$529,200 in the net earnings of 1881-82, or \$1.25 per share of stock. But since 1882 the downward course has been resumed, and the rate has fallen 11 per cent. in two years, from 1.28 to 1.10 cents. This reduction in the rate was equivalent to a reduction of \$1,284,400 in the net earnings from the traffic of last year (ending with March), or \$2.45 per share of stock.

This is a great change to occur when rates have reached the low figures of recent years, but it is probably largely due to the increase in the proportion of through freight; for while the multiplication of lines across Iowa has tended to reduce the Rock Island's Chicago-Council Bluffs traffic, it has meanwhile secured a large share of the Chicago-Minneapolis traffic, and large crops in Kansas have increased through traffic from that state, while poor crops east of the Missouri have reduced the local traffic.

From a rate of 1.10 cents per mile there cannot long be a reduction at the rate of previous years. The profit is all there is to reduce, and this last year was but 0.46 cent per ton per mile, even if we assume that the expenses were no larger a proportion of the freight rate than of the passenger rate. No longer ago than 1877 the profit was 0.82 cent per ton per mile, and in 1879 it was 0.66 cent. While the multiplication of roads temporarily tends to reduce average rates, in the long run it is likely to prevent it, or make it less than it would be otherwise, first because the traffic diverted by the new lines is usually much more through (on which rates are lowest) than local, but also and chiefly because they prevent the reduction of expenses due to the increase in the amount of traffic carried by the same road. It is doubtful whether there is any more competition among four carriers between the same points than among three. But where traffic was increasing 10 per cent. yearly, and where, therefore, it doubled in a little more than seven years, after the introduction of a new route it may be three years before the old roads have as large a traffic as before; while but for it they would be carrying about one-third more each at the end of three years, and would have smaller expenses per unit of traffic consequently; and even if they should make rates which would give the same profit per ton, and so give them a third more profit than before the traffic had grown, they would be charging a rate lower by as much as their expenses were reduced. The increase of railroads between Chicago and Council Bluffs, as between New York and Buffalo, and elsewhere, will inevitably make the cost of transportation greater than it would have been otherwise; and in all probability it will make the price of it higher also; not by causing an advance in through rates, perhaps (though this is possible), but by preventing the decrease that would have followed inevitably a large increase of traffic carried by the old lines.

The course of passenger rates on the Rock Island, as on most other roads, has been very different from that of freight rates. There was a large decrease from 1871 to 1875 (3.840 to 3.061 cents per mile); but then they were almost stationary for five years. They fell

from 2.974 to 2.505 cents from 1879 to 1882, but for the last three years they have been 2.505, 2.504 and 2.572 cents, respectively—an increase of 3 per cent. last year. The passenger traffic, too, has increased more rapidly and more regularly than the freight traffic since 1880, which is very unusual. The gain was but 10 per cent. in freight traffic, while it was no less than 56 per cent. in passenger traffic. From 1881 to 1882, when the freight traffic increased 6 per cent., the passenger traffic increased 21½ per cent.; from 1882 to 1883 the freight traffic decreased 10½ per cent., but the passenger traffic increased 17 per cent.; last year, however, the increase was 8½ per cent. in freight against a decrease of 3½ per cent. in passengers, but this leaves the passenger traffic 11½ per cent. more and the freight traffic nearly 3 per cent. less than in 1882. The result is that while in the last two years there was a decrease of \$1,632,781 (16½ per cent.) in freight earnings, in passenger earnings there was an increase of \$447,961 (15½ per cent.), and since 1880 the increase is no less than \$967,868 (44 per cent.) in passenger earnings, against \$21,150 (¼ per cent.) in freight earnings.

This is a growth in passenger traffic and earnings which has seldom been equaled by any old road without considerable increase in mileage. We chronicle many instances of enormous growth in freight traffic and earnings, but very few like this in passenger business.

The Chicago & Alton, however, has taken a somewhat similar course of late years. Without increase in mileage, it gained 35½ per cent. in passenger traffic and nearly 40 per cent. in passenger earnings from 1880 to 1883; and its freight traffic meanwhile increased but 15 per cent., and its freight earnings 6½ per cent.

Earnings for June have been reported by 19 more railroads since our last issue, but the Grand Trunk is the only very important one among them, and in the aggregate the 19 roads earned but little more than \$3,000,000. Only five of them report any increase in earnings, and these increases are all small. Some of the decreases, on the other hand, are important, as 20 per cent. by the Chesapeake & Ohio, 18 by the Cincinnati, Washington & Baltimore, 13½ by the Flint & Pere Marquette, and 15½ by the Grand Trunk. The only Northwestern roads reporting this week are in Wisconsin, and probably depend more on the lumber business than on anything else. One that has a considerable increase in mileage reports a small increase; the others important decreases. The lumber roads in Michigan also show a decrease.

Several of the roads reporting this week are in the central district north of the Ohio River. In all nine roads in this district (east of Chicago and St. Louis) have reported so far, and all but one show a decrease in earnings. Most of the other roads that have reported this week are in the South, and four out of six show a decrease. In the aggregate the 47 roads that have reported so far had the following mileage and earnings in June:

	1884.	1883.	Increase.	P. c.
Miles.....	42,714	39,831	2,881	7.2
Earnings.....	\$18,430,115	\$19,288,584	-\$858,469	4.9
Earn. per mile.....	432	484	-52	10.7

The important Eastern roads have not reported as yet.

#### The July Crop Report.

The July report of the Department of Agriculture makes the condition of cotton one point lower than the June report (86 instead of 87). The condition at the same time was 90 in 1883, when the crop was less than 6,000,000 bales, and 92 in 1882, when it was 7,000,000 bales. The weather of the next six weeks will determine whether there shall be a fair or a short crop. It is very unlikely that the yield will be equal to that of good years, like 1882, and a drought following the excessive rains east of the Mississippi would probably make the crop less than last year's. No crop is subject to so many changes before gathering.

The condition of winter wheat is reported to have improved from an average of 93 in June to 94, and the Department estimates an average yield of about 13 bushels to the acre on the 27,000,000 acres sown, making the aggregate 350 millions against about 291 millions last year, 385 in 1882, 393 in 1881, 384 in 1880, and 343 millions in 1879. This illustrates what we said last week, that the winter wheat crop is not a very large one. But for the largely increased acreage on the Pacific coast the product would be decidedly below the average. The average condition of spring wheat is given as 100, the same as last year, and a point lower than the June report made it, though current newspaper reports indicated that the crop had improved in June rather than otherwise. There is an increase of 9 per cent. in the acreage, and as the condition is the same as last year, when the yield was 130 million bushels, this means that with the same changes in condition as last year until harvest, the crop of spring wheat will be about 142 million bushels, and the total wheat crop 492 millions, against 421



last year, 504 in 1882, 380 in 1881, 498 in 1880, and 460 in 1879.

The most important news is that concerning corn, the acreage of which is given as 2 per cent. more than last year, and the average condition as 93, which has been exceeded in July but twice in ten years—in 1879 and 1880. The condition was 88 last year, 84 in 1882, and 90 in 1881. The great damage to the crop last year was by frost, but it had been as advanced in July as it is this year the damage by the frost would have been very much less. In different States the condition is given as follows:

N. Y.	96	Ohio	93	Iowa	102
Penn.	93	Mich.	99	Mo.	98
Kentucky	90	Ind.	97	Kansas	94
Tenn.	95	Ill.	99	Neb.	99

The six states last named produced nearly 60 per cent. of the total corn crop of the United States last year, though in three of them the crop was exceptionally poor.

The acreage in successive years in the whole United States has been:

1879.	1880.	1881.	1882.	1883.	1884.
62,399,000	62,318,000	64,202,000	63,630,000	63,303,000	69,500,000

There has not been an average yield since 1880. In 1879 the average yield was 28½ bushels per acre; in 1880, 27½ bushels. These yields would make the crop this year 1,954 and 1,911 million bushels; and even a crop of 25 bushels per acre would make it 1,737 millions. The larger yields are entirely possible, with favorable weather, and the weather must be unfavorable to make the production as little as 25 bushels per acre, especially as the good condition and chief increase in acreage are in the states where the yield is above the average. The great corn states west of Pennsylvania are credited with an increase of more than 3 per cent. in acreage, and Nebraska, which last year had an average yield of 36 bushels per acre, against an average of only 22½ from the whole country, is credited in the report telegraphed with the astounding increase of 20 per cent. in acreage, which, as it is also credited with an increase of 10 per cent. in wheat acreage, indicates that there is a mistake somewhere or that Nebraska has been growing with much greater rapidity than has been suspected. There is promise of a much greater yield west of the Mississippi than ever before, and Iowa with its increased acreage and excellent condition is likely to exceed the immense crops of 1879 and 1880, which were 275 and 260 millions of bushels. With the average yield of 1879 the present acreage would produce 304 millions, and with the yield of 1880, 278 millions, against actual yields of 170 millions last year, 175 in 1882 and 173 in 1881. The average yield of 1879 in Iowa was a phenomenal one (41½ bushels per acre), but the prospect now is for equaling that of 1880, and the effect on the Iowa railroads of producing 100 million bushels more corn than in any of the three years previous must be important.

In Illinois the acreage remains greater than in Iowa, but no increase is reported there this year, and the condition, though high, is not so high as in Iowa. Its production in successive years has been, in millions of bushels:

1879.	1880.	1881.	1882.	1883.
323	240	177	182	204

There has been a very large decrease in the corn acreage in Illinois since 1879 (from 9,019,000 to 8,151,000 in 1883 and 1884, which is 9½ per cent.), and with as good an average yield as in 1879, the production this year would be but 293 million bushels, or 90 millions more than last year. The crop is of less relative importance in Illinois than in Iowa, but a full yield, which would be about 275 millions, would be of great advantage there, especially as the wheat crop is decidedly light in that State.

Taking the whole of the great corn belt, including Ohio, Indiana, Illinois, Iowa, Nebraska, Missouri and Kansas, its acreage and production have been for five years:

1879.	1880.	1881.	1882.	1883.
Acres.....	33,231,000	31,502,000	31,591,000	31,515,000
Bush.....	1,291,841,703	1,046,004,000	737,759,000	953,598,000

Now this year the acreage is 36,096,000, which with the average yield of 1879 will give 1,305 millions, with that of 1880 (which was only fair) 1,151 millions, and even with that of 1882 it will give 1,022½ millions. We may reasonably expect 200,000,000 bushels more in this district than last year, and though it is possible that very great damage may be done yet by drought or frost, the dangers are less than those to which most crops are exposed.

The railroads which will be most benefited if the corn crop turns out as it now promises to do, are those extending directly west and southwest of Chicago, the lines across Iowa having the double advantage of a great increase in production directly on their lines and beyond them in Nebraska. The prospect in Kansas is for a large crop, but for a smaller one than last year, the condition being considerably lower, and the acreage but 1 per cent. greater. The roads to which the corn crop is especially important are—about in the order of its importance to them—the Chicago, Burlington & Quincy, the Wabash, the North western, the Rock Island, the Milwaukee & St. Paul. It is very much more important than it used to be to the St. Paul and the Northwestern, because they have greatly increased their mileage in Iowa, where corn is the leading crop. For three successive years a bad corn crop has materially decreased the traffic of these roads. A good one this year will do much to offset the dullness in the non-agricultural industries, and will do something to stimulate these industries.

#### Chicago, Burlington & Quincy Earnings in May.

The earnings of the Chicago, Burlington & Quincy Railroad in May were but \$29,745 (1.4 per cent.) less gross, but were \$69,125 (6½ per cent.) less net this year than last, there having been an increase in the working expenses.

For five successive years its earnings and expenses in May have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1880.....	\$1,908,827	\$800,172	\$1,019,455
1881.....	1,679,456	825,753	753,703
1882.....	1,505,261	857,494	647,767
1883.....	2,009,872	1,128,116	881,756
1884.....	1,981,127	1,158,498	822,629

The gross earnings were thus larger this year than in any other except last year, and were 32 per cent. more than in 1882, 18 per cent. more than in 1881, and 3½ per cent. more than in 1882. The net earnings were largest in 1880, but this year they were 27 per cent. more than in 1882, and 9 per cent. more than in 1881.

For the five months ending with May the earnings and expenses of this road have been:

1884.	1883.	Inc. or Dec.	P. c.
Earnings.....	\$9,538,839	\$9,487,287	+
Expenses.....	5,392,610	5,030,428	+
Net earn. ....	\$4,146,229	\$4,456,859	-

Thus for the whole year there has been a trifling increase in gross earnings, but the increase in working expenses was so much larger that there was a decrease of 6½ per cent. in the net earnings, which is about 42 cents per share of stock.

Of the \$362,182 increase in working expenses no less than \$303,358 was in the first two months of the year. The changes in expenses have been trifling since February, and the changes in earnings were small in April and May. The increase or decrease in gross earnings, working expenses and net earnings in each month of the year has been:

	Gross earnings.	Expenses.	Net earnings.
January.....	+\$22,540	+\$194,422	-\$171,882
February.....	+\$39,892	+\$24,558	+\$15,334
March.....	+\$39,555	+\$7,807	+\$31,748
April.....	+\$3,321	+\$20,636	-\$17,315
May.....	+\$28,745	+\$30,382	-\$1,637

In two months there were great changes in gross earnings—a great increase in February and a great decrease in March; but the latter was due to extraordinary earnings last year, while the February gain was over the largest February earnings this road had ever had. There were also great changes in expenses in two months—large increases in January and February. This has resulted in a large decrease in net earnings in January and March and a large increase in February.

For five years the gross and net earnings and working expenses for the five months ending with May have been:

Year.	Miles.	Gross earnings.	Expenses.	Net earnings.
1880.....	2,597	\$7,976,649	\$3,813,441	\$4,163,208
1881.....	2,692	7,014,745	3,977,815	3,036,930
1882.....	2,603	7,718,451	4,344,082	3,374,369
1883.....	3,231	9,487,287	5,030,428	4,456,859
1884.....	3,358	9,538,839	5,392,610	4,146,229

The gross earnings were the largest this year, but per mile they were largest in 1880—an extraordinarily favorable year for the road. The working expenses have increased without interruption and faster than the earnings, for the latter increased 19½ per cent. from 1880 to 1884, the expenses increased 41½ per cent., and the net earnings of the 3,358 miles this year were a trifle less than those of the 2,597 miles in 1880, and the net earnings per mile fell from \$1,603 to \$1,235. The net earnings this year, however, are 36½ per cent. more than in 1881, 23 per cent. more than in 1882, and, as we have seen, but 6½ per cent. less than last year.

The course of the gross earnings on this road may be compared with that on three other Chicago roads with which it competes. The percentages of increase or decrease have been:

	May.	Five months.
Chicago & Alton.....	0.6 p. c. inc.	1.3 p. c. inc.
Chicago & Northwestern.....	4.0 p. c. dec.	0.4 p. c. dec.
Chicago, Milwaukee & St. Paul.....	2.3 p. c. dec.	1.8 p. c. dec.
Chicago, Burlington & Quincy.....	1.4 p. c. inc.	0.8 p. c. inc.

In May, thus, the Burlington did somewhat better than any of the others, and for the five months its progress was more favorable than that of the two roads north of it, though not so favorable as that of the Chicago & Alton. But on none of these roads was the change in gross earnings considerable. The increase in mileage, however, was so great on the Northwestern and the Milwaukee & St. Paul that they make a decidedly poorer showing than the other roads, the earnings per mile having been, for five months:

	C. & A.	C. & N. W.	C. M. & St. P.	C. B. & Q.
1884.....	\$3,759	\$2,247	\$1,788	\$2,841
1883.....	3,692	2,219	1,917	2,930
P. c. of inc. or dec. ....	+ 1.8	- 7.7	- 7.2	- 2.3

The only obvious reason why the two northern roads should have fared worse than the two southern ones is the more complete failure of the corn crop on the former, while the latter had a share of the bountiful Kansas crops, and one of them a much larger share of the bountiful Nebraska crops to carry. Last year also the two northern roads were having a very large traffic in construction materials carried for the Northern Pacific and other new roads, and the other roads comparatively little. Now all fare alike in having little.

An estimate of the wheat crop which puts the probable yield at 553 millions of bushels has been published, which it is safe to say is greatly exaggerated in at least two states—Kansas and California. It credits Kansas with 49 millions, while it produced but 26,850,000 last year and 31,248,000 in 1882, the crop having been magnificent both years. The Department of Agriculture estimates the area there as 10 per cent. more than last year, when it was 1,584,000 acres and 2 per cent. less than in 1882. The phenomenal yield of 1882 would give it less than 34 million bushels. The estimate gives California 65 million bushels, and is based on statements of the California newspapers. But these have uniformly exaggerated the crop, not only before, but immediately after the harvest, general-

ly claiming 30 to 50 per cent. more than the crop turned out to be, which can be known better there than in most states, because all but a small fraction of it is exported from San Francisco. The Department of Agriculture credits California with 2,930,000 acres of wheat this year, which is 7 per cent. more than last year and 8 per cent. more than in 1882. The largest average yield ever reported there was 16 bushels per acre. With this year's acreage this would give less than 48 million bushels. The crop early in June promised as well as the best; but the heavy rains in that month injured it somewhat. In these two states it is probable that this estimate exaggerates the crop 32 million bushels. The figures given for the spring wheat states are not of much importance so long before harvest.

Through and local shipments eastward from Chicago of flour, grain and provisions for the week ending July 12, by the incomplete report to the Board of Trade, were 25,534 tons, against 24,834 in the corresponding week of last year and 15,731 in 1882.

The shipments and the percentages of the total going by each route for the last six weeks have been:

Tons.	June 7.	June 14.	June 21.	June 28.	July 5.	July 12.
Flour.....	6,299	5,106	6,759	5,874	6,163	3,429
Grain.....	34,782	41,146	38,104	41,909	25,829	15,489
Provisions.....	9,534	7,925	8,172	11,504	7,781	6,025
Total.....	50,615	56,177	53,036	59,384	39,773	25,534

Per cent.	June 7.	June 14.	June 21.	June 28.	July 5.	July 12.
C. & Grand T.....	13.2	13.2	16.0	14.5	16.3	13.5
Mich. Cen.....	11.4	13.4	12.9	13.4	9.6	8.3
Lake Shore.....	14.5	15.0	11.2	12.1	12.3	19.7
Nickel Plate.....	8.1	11.6	10.5	11.1	9.1	10.9
Ft. Wayne.....	17.2	15.7	15.2	15.6	16.7	18.2
C. St. L. & P.....	7.5	7.7	10.5	9.6	11.5	7.8
Balt. & Ohio.....	12.3	13.3	12.5	7.2	10.2	10.6
Ch. & Atlantic.....	10.6	12.1	11.2	16.2	14.3	11.0
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

The total shipments, we see, are not half as great as during the time of the 15-cent rate, though fully as large as usual at this season. The falling off has been chiefly in grain and flour. Thus the average weekly shipments for the four June weeks and the shipments for this last week, which is probably the first during the whole of which all the shipments were at 20 cents, were:

	Flour.	Grain.	Provisions.	Total.
June average.....	6,010	39,485	9,299	54,794
Week to July 12.....	3,429	15,489	6,025	25,534
Per cent. of decrease.....	43	60	29	53½

This must not all be attributed to the advance in the rate, however. The average weekly through shipments in June and July of previous years have been:

	1879.	1880.	1881.	1882.	1883.
June.....	60,721	72,232	56,574	27,021	32,100
July.....	32,920	36,171	58,541	21,460	31,309

In every year, except 1881, the shipments were larger in June than July, and in 1881 the low rates of the railroad war prevailed the whole of July and less than half of June. In 1879 there was a considerable advance in rates in July, which makes that year resemble this somewhat. In 1880 and 1882 rates are supposed to have been maintained pretty well in both months. Last year there was some cutting of rates after June, but it was not general enough to have much effect on the bulk of shipments. The first full week of the advance of rail rates there was no evidence of a diversion of shipments to the lake vessels, for though there was a large decrease in rail shipments, there was a large decrease in lake shipments also. Next Monday another advance, to 25 cents, is to go into effect.

The distribution of the shipments among the several Chicago railroads was the most unequal for a long time. While the Lake Shore had a larger proportion than for a month before, the Michigan Central had an extraordinarily small one, and the three Vanderbilt roads together 38.9 per cent. of the whole—the largest they have had for four weeks. The two Pennsylvania roads had 27 per cent. of the whole. There is some profit on the traffic now, but the volume of it is small.

The Illinois Central earnings for the half-year ending with June have been reported for the Southern Division and for each of the three leased Iowa roads separately. Previously during this year the earnings of the Illinois lines and the Southern Division have been reported together. It appears that six-sevenths of their decrease in earnings was on the Illinois lines, the decrease on the Southern Division having been trifling. The figures are:

	1884.	1883.	Decrease.	P. c.
In Illinois.....	\$2,882,650.44	\$3,035,516.04	\$152,865.60	5.3
Southern Div.....	1,909,502.47	1,834,150.01	24,647.54	1.3
Total.....	\$4,792,152.91	\$4,869,666.05	\$177,513.14	3.5
Dubuque & Sioux City.....	419,621.31	502,279.93	82,658.62	16.5
Iowa Falls & Sioux City.....	315,695.10	364,131.41	48,436.31	13.3
Cedar Falls & Minn.....	60,430.57	64,115.39	3,684.82	5.7
Iowa Division.....	\$795,746.98	\$930,526.73	\$134,779.75	14.5
Whole line.....	\$5,587,899.89	\$5,800,192.78	\$212,292.89	3.3

For six successive years the earnings of each principal division in this half year have been:

	Ill. lines.	Southern Division.	Iowa lines.	Total.
1879.....	\$2,524,460	\$1,313,112	\$800,442	\$4,638,014
1880.....	2,809,762	1,640,989	804,274	5,255,025
1881.....	3,063,375	1,914,148	787,833	5,765,356
1882.....	3,170,349	1,556,346	913,963	5,640,658
1883.....	3,035,516	1,834,150	930,527	5,800,193
1884.....	2,882,650	1,909,503	795,747	5,587,900

Thus the earnings of the whole system are this year the smallest since 1880, though not much less than in 1881 and 1882. The Illinois lines not only earned 5.3 per cent. less than last year, but also 9 per cent. less than in 1882 and 6 per cent. less than in 1881. The Southern Division makes a surprisingly good return, considering last year's light



crops, and its gain over 1882 is 22% per cent. The Iowa lines keep up their reputation for non-improvement, having earned less than in 1880 even; but they have the special excuse of a frosted corn crop, the damage having been especially great on these lines.

The eighteen principal English railroads have earned almost exactly five million dollars a week for the first twenty-four weeks of the present year.

These earnings are practically identical with those of last year, showing a stagnant condition of trade. The increase in mileage open is 1.1 per cent. The leading railroad, the London & Northwestern, shows a decrease of \$500,000, which is attributed in great part to the diminished traffic in American food products between Liverpool and London. The gross annual traffic receipts of British railroads have hitherto shown an increase every year, except in 1858, and in 1878 and 1879, all of which years showed a slight decrease from previous years.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

*Atlantic & Danville.*—Extended from Waverly, Va. westward 3 miles. Gauge, 3 ft.

*Central Pacific.*—Track on the Oregon Division is laid to a point thirty-six miles northward from Redding, Cal., an extension of 4 miles.

*Chicago, Burlington & Kansas City.*—Extended from Sumner, Mo., southwest to Grand River, 4 miles.

*Chicago, Milwaukee & St. Paul.*—The Cedar Rapids & Ottumwa Branch is completed by laying track from Amana, Ia., south by west to Sigourney, 43 miles.

*Kentucky Central.*—Extended from Roundstone, Ky., southward to Livingston, 5 miles.

*Milwaukee, Lake Shore & Western.*—Extended from Gogebic, Mich., westward to Presque Isle River, 11 miles.

*Ottumwa, Cedar Falls & St. Paul.*—Track laid from Belle Plain, Ia., southward to the Rock Island crossing, 13 miles.

*Sea Isle & Ocean City.*—Track laid from Sea Isle, N. J., northward 7 miles.

*Union of Chattanooga.*—Track laid in Chattanooga, Tenn., 5 miles.

*Western North Carolina.*—Extended from Balsam Mountain Gap, N. C., southwest to the Tuckasee River, 8 miles.

This is a total of 103 miles of new railroad, making 1,519 miles reported to date for the current year. The total track reported laid to the corresponding date for 12 years past is as follows:

	Miles.		Miles.
1884.....	1,519	1878.....	819
1883.....	2,587	1877.....	731
1882.....	5,100	1876.....	932
1881.....	2,563	1875.....	518
1880.....	2,375	1874.....	727
1879.....	1,083	1873.....	1,696

These statements include main track only, no account being taken of second tracks or other additional tracks or sidings.

Tracklaying is now about at its height, and considerable additions to mileage may be expected for some weeks to come. It is now apparent, however, that nothing like the mileage of 1882 or even of last year is to be completed in 1884, and the new construction for this year will probably be less than that of any year since 1879.

#### Nut-locks, Even and Broken Joints and Cross-Ties.

A great many responses have been received to the circulars sent out on this subject, from which we present below a few that have interesting suggestions. Many more replies are to be received, and again we request responses from those who have not received a copy of the circular, the substance of which will be found in our issue of July 4:

##### EASTERN EXTENSION RAILWAY.

Referring to the question of even and broken joints, I am decidedly in favor of the former. Track laid with even joints to a great extent prevents that oscillating motion so frequently found in cars, when trains are running at a high rate of speed. Track laid with broken joints is more liable to cause this oscillating motion in cars, particularly when road-bed is soft. Even joints laid on a sleeper of 12 in. face, making a solid joint, less sleepers are required than in cases of broken joints, resulting in less work for sectionmen. Another advantage will be found in even joints when lifting track.

##### CLEVELAND, MT. VERNON & DELAWARE.

I think if you trace the practice of laying joints to its infancy, that you will find that it was first started on the correct principle; that is, laying the rails with broken joints, which is in accordance with the old-established rule for all kinds of buildings in which a continuity or a transmission of strength is required. As it is sometimes stated, broken joints make the bond. But as railroads developed, the track became on a great many roads very far from being the proposed "permanent way." The rails were made from inferior iron, with the old form of chair and laid on poor ballast, so that the joints became low and battered, and, in the case of broken joints, causing jars or jolts on either side alternately, thereby producing a rolling or rocking motion in passing trains. It became necessary to do away with this very objectionable feature, and it was rightly considered that if the evil of jars and jolts must exist, it was better to meet it squarely. It was, therefore, determined that a direct down and up movement would be preferable to the rocking motion; hence the introduction of the square or even joints.

But within the past eight years the general condition of

track has improved so much with the almost universal introduction of steel rail with improved joints, and the much improved ballast on former road-bed, that the low battered joints or rocking motion very seldom occur.

With these improved conditions I consider the broken joints are preferable. I notice some roads are changing from the square joints to the broken joints.

With battered joints, or where the ballast is so inferior that low joints cannot be prevented, I recommend the square joints.

The advantage I claim for broken joints is that with steel rail well laid on good or fair ballast, the broken joints will keep in better surface and line than the square joint, because the weak parts are better distributed and bonded than when placed directly opposite.

In the very earliest days of railroads the joint was recognized as the weakest part of the rail, and I think we should so consider it still.

R. FRENCH, Chief Engineer.

AKRON, O., July 5, 1884.

##### PROVIDENCE, WARREN & BRISTOL.

With first-class ballast—broken stone, coarse clean gravel, or perhaps slag—and a track well taken care of, I believe broken joints to be the best, as under these conditions I believe a smoother track can be obtained; moreover, it is much more convenient in laying track around curves.

With poor ballast or poor care of track, or both, however, track laid in this manner is very objectionable, as the joints will be very liable to get out of level, and this, of course, will give an oscillating motion to the train, which may become, particularly when the frost is coming out of the ground, very dangerous. With the joints opposite, this oscillation will not take place, as the joints will be displaced alike. I have tried satisfactorily broken joints around curves.

WATERMAN STONE, Superintendent.

PROVIDENCE, R. I., June 30, 1884.

##### NORFOLK SOUTHERN.

I think that the Courtney & Trull paper washer is superior to any nut-lock I have ever seen in use. Broken joints on curves and even joints on straight lines are best on dirt bed. Even joints on curves are objectionable and should always be avoided, but on straight track even joints are best, especially on dirt road-bed where it is impossible to obtain ballast. On well ballasted roads I should always prefer broken joints all through, but on dirt road-beds I think even joints on straight lines most economical and better for all departments.

Coarse, clean sand or gravel is better than broken stone for ballast, as the rail will last a third longer and the coarse sand will keep the track as well if not better.

A. H.

BERKELEY, Va., July 1, 1884.

##### FLINT & PERE MARQUETTE.

I wish to say (as to cross-ties) that we Americans are the most wasteful people in the world. A rich continent spread out before us, axe in hand, we destroy the timber. If our railroad managers were wise and prudent, they would treat ties chemically to preserve their life and durability, and all roads should be experimenting in this line.

In regard to nut-locks, the most effective and cheapest device I have seen used is an ordinary horse-shoe nail with hexagonal nuts and a slight groove in the fish-plate to retain the nail.

This company uses hemlock ties, not because they are the best, but because they are, at present, most abundant and cheapest. White oak is our best tie in its natural state. Cedar, I am inclined to believe, would last longer if some suitable cushion of wood and iron was placed on top to prevent cutting the tie.

WM. B. SEARS, Chief Engineer.

EAST SAGINAW, Mich., July 6, 1884.

##### WISCONSIN & MICHIGAN RAILROAD CO.

It has been the practice on this road, and it is still continued, to lay track with even joints. Personally I do not like it; never found any particular advantage in it. Where there is much curvature and odd lengths of rails not at hand it causes a great deal of trouble. If rails are not properly curved track will not keep its alignment nearly as well. As to the action of the train and its effect upon the joints, I think the vertical blow in the one case is fully offset by the rolling and pitching of the other.

The Verona nut lock, being round, has nothing to prevent its turning back with the nut and often does so. The same is true of any round lock or washer.

The vulcanized fibre, as also any other elastic substance, by constant pressure becomes hardened and set and is then no better than metal.

C. S. WOODARD, Chief Engineer.

GREEN BAY, Wis., July 2, 1884.

#### Foreign Railroad Notes.

The Berlin Railroad Direction has issued an order that, in consequence of many railroad accidents recently reported, the conductors are strictly forbidden to punch the tickets while the train is running. All tickets must be punched before the train starts. The accidents referred to were probably those to conductors in passing from car to car or from compartment to compartment.

The locomotives of the German Railroad Union in 1882 consumed, among other fuels, 49,827 tons of peat. The Austro-Hungarian roads in the Union burned considerable wood—209,918 cubic metres, against 974,316 tons of lignite and 655,708 tons of coal. On the German roads 97 per cent. of the fuel used (reckoned by heating capacity) was coal; on Austro-Hungarian roads, only 50% per cent. The

total consumed on all the Union roads was equivalent to 4,560,628 tons of coal.

At the beginning of the excursion season the Prussian Minister of Public Works calls the attention of the state railroad employes to circulars heretofore issued concerning their bearing toward the public, and especially to one which directs them to preserve a respectful though decided demeanor; also to a regulation to prevent the crowding of compartments, which provides that not more than four may be placed in a first-class, six in a second-class, or eight in a third-class compartment, so long as there is room enough in other compartments, and also providing that all compartments shall be open at the first station; also to a regulation providing for the airing of cars that have been exposed to the sun and sprinkling them with cold water, keeping the lavatories clear, and sprinkling the station platforms in dry weather.

Holland owns a considerable number of railroads (667 miles) which it does not work directly but leases to a corporation organized for the purpose of working them and which works also a smaller mileage of corporation roads. The contract of the company with the government provides that one-fifth of the gross earnings shall go to the state and that then, after the payment of certain prior charges, the net profits shall be divided as follows: To the company up to 4% per cent. on its stock; then an equal division of the surplus till the company has received 5 per cent.; of any surplus that remains only one-fifth goes to the company and four-fifths to the state. The business of 1883 gave the company about 5 1-7 per cent. The company owns the equipment, or a large part of it, and has expended about \$10,400,000.

Some two or three years ago the German Railroad Union found itself compelled to choose a new executive, or "managing direction," as it is called. The management of the Berlin & Anhalt Railroad had held the place for many years, but that railroad had been bought by the Prussian government. The Berlin & Hamburg management was chosen in its stead, but recently that road has also been bought by Prussia, and last June, at a special meeting of the Union, one of the Prussian state railroad managements, "the Royal Direction at Berlin," was chosen as the executive, which will doubtless be more stable than the last one was. This "direction" consists of a little group of what may be called general officers of a railroad system of from 1,000 to 2,000 miles; but the President of the direction in most matters has authority to give orders, the other members being rather his staff than his co-ordinates, and the President of the Berlin Direction will virtually be President of the German Railroad Union. The Prussian state railroads now make up nearly half the mileage in the Union, and it seems natural that they should furnish the executive.

The report of axle breakages in 1883 on the roads of the German Railroad Union shows a total of 157, against 181 in the previous year. Of those breaking last year 122 were iron and 35 steel. One of these axles had been running 35 years, three more than 30 years, 10 more than 25 years, and 35 more than 20 years. The average life of those whose age was known was a little less than 15 years. Three of the broken axles were under passenger cars, 100 under freight cars, 35 under tenders, and 19 under locomotives. On the average they had run more than 200,000 miles each. The causes of the breakages are given as follows: Defects in material, 17; defective manufacture, 2; an old crack that could have been detected, 49; an old crack that could not have been detected, 39; collisions, 3; derailment, 1; hot journal, 10; unknown, 36.

Besides these breakages no less than 1,480 axles were taken out because of cracks detected in the shops, 1,306 of which were under freight cars. The number removed the previous year was 1,645. Of these 7 per cent. last year and 11 per cent. in 1882 were steel axles, but no information is given of the whole number of each that were in use.

The producers of petroleum on the western shore of the Caspian Sea have been contemplating seriously the laying a pipe line entirely across Persia to the Persian Gulf. If this were done they say that they would have the Asiatic market to themselves; which is not so certain, however, because there would be no traffic to the Persian Gulf port for vessels taking petroleum to India, China, etc., from it. A pipe line would have to be something more than 700 miles long to reach the coast, and as it would for a long distance pass through territory of savage Kurds and other nomadic tribes, it is feared that it could not easily be kept in operation.

The railroad from the Caspian to the Black Sea, which has been in operation throughout for more than a year, does not seem to answer the requirements of the oil producers, though it is directly in the line to Europe, is but 600 miles long, and reaches waters whence shipments can be made very directly to all parts of Europe, and for all Mediterranean ports is a very short route, and there is the advantage of a great commerce in grain already existing between the Black Sea ports and Western Europe. But this railroad, which passes through a valley between parallel ranges of the great Caucasus range, is a very hard one to work. It passes over an elevation of 5,600 ft. above sea level, while the Caspian level is 85 ft. below sea level. It is said that only five or six cars can be taken over the summit in a train, and that three locomotives are required to do that. The rates are probably very high; at least the petroleum traffic at Batum, the Black Sea end of the road, is not important. It is somewhat significant,



however, that the project for a pipe line should be for one to the south toward the small market and not for the shorter line to the Black Sea toward the great European market, and indicates that the producers have not much hope of competing successfully with American petroleum. The most recent project is to extend the Transcaucasian Railroad southeastward into Persia, and engineers have been sent to Teheran to negotiate concerning it. But a railroad to the Persian Gulf would have to be much longer than a pipe line and of course many times as costly; and it would require much more than the petroleum traffic to support it.

## TECHNICAL.

### Locomotive Building.

The Roanoke Machine Co. at Roanoke, Va., recently completed a consolidation engine for the Norfolk & Western road. The capacity of these works is about three new locomotives per month, in addition to all the repair work which they may be called upon to do.

H. K. Porter & Co., in Pittsburgh, last week shipped a locomotive to the Escambia Railroad in Florida. They have also completed a locomotive to go to Japan, which is one of an order of 12 for that country.

Adams & Price, in Nashville, Tenn., have undertaken the manufacture of light locomotives suitable for logging railroads, tramways and similar work, to run either on wooden or iron rails.

### Car Notes.

The North Pacific Manufacturing Co. in Portland, Oregon, recently completed a car for the street railroad in that city. It is a very handsome car, and the inside finish is in Oregon ash.

The Barney & Smith Manufacturing Co. in Dayton, O., has closed a contract to build a number of box cars for the Cincinnati, Hamilton & Dayton road.

The Indianapolis Car Works are building 1,000 coal cars for the Ohio Southern road. They are to be 34 ft. long, and to carry 25 tons of coal each.

The Chicago, Rock Island & Pacific shops in Chicago have recently completed four very handsome chair cars, which are to run between Chicago and Kansas City.

The Ontario Car Works in London, Ontario, have received an order for 100 flat cars to go to Nova Scotia.

The Youngstown Car Works in Youngstown, O., have closed a contract to build 500 box cars for the Pittsburgh, Cleveland & Toledo road under a lease or car trust arrangement.

### Bridge Notes.

The Milwaukee Bridge Co. has taken a contract to build an iron highway bridge at Selma, Ala., over the Alabama River.

Hoffman & Bates, in Portland, Oregon, have taken contracts to build three Pratt combination truss bridges across the Chehalis River, near the town of Claquato, in Washington Territory.

Messrs. Anderson & Barr, contractors for the sub-structure of the bridge over the Arkansas River, at Little Rock, are pushing the work rapidly. The caisson for the draw pier has reached bed-rock and the work of filling it with concrete is in progress.

The Iron City Bridge-Works, in Pittsburgh, are building seven spans of the new Junction Railroad bridge in that city. They are also building two very large turn-tables each 100 ft. long, to be operated by steam. One of them is for the Pittsburgh, Cincinnati & St. Louis at Columbus and the other for the Pittsburgh, Fort Wayne & Chicago, at Fort Wayne.

The New Jersey Steel & Iron Co. in Trenton, N. J., has taken the contract for the material for about 4½ miles of elevated railroad in Brooklyn, N. Y. The contract will require about 10,000 tons of iron to fill it.

### Iron Notes.

The Chestnut Hill Iron Ore Co. has started up its No. 2 furnace in Columbia, Pa. No. 1 Furnace is also to be started shortly, and No. 3 Furnace about the end of July. These furnaces have been lying idle for nearly three years.

The Delaware Rolling Mill in Philadelphia, N. J., was sold at public sale July 2, by the Receiver, to Dennis Reilly for \$24,600. The claims against it amount to about \$175,000. The sale must be approved by the Court of Chancery.

The Laclede Rolling Mills in St. Louis shut down last week. Only the sheet and plate mills have been running for some time.

Franklin Furnace, in Sussex County, N. J., which is one of the largest furnaces in the United States, has been in blast since Feb. 1, 1882, and is still doing good work.

The Clapp & Griffiths Steel Co. has been organized in Pittsburgh to operate the new steel plant recently built in that city. The capital stock is \$100,000, and the directors are James P. Withrow, Henry W. Oliver, David B. Oliver, James B. Oliver and George E. Tener.

Chatham Furnace in Columbia County, N. Y., has gone out of blast for repairs but will be started up again as soon as they are completed.

It is announced that the Albany & Rensselaer Iron & Steel Co. will shut down its mills in Albany and Troy, N. Y., on Aug. 1. The stoppage is expected to last for two months and possibly longer.

### Manufacturing Notes.

In the new shops of the Chesapeake, Ohio & Southwestern Railroad at Paducah, Ky., the machinery in the car shop is driven by an engine of 100 H. P., that in the machine shops by one of 65 H. P., and the electric light plant by an independent engine of 10 H. P. All these engines are of the Westinghouse pattern, built by the Westinghouse Machine Co. in Pittsburgh.

A notice in this column last week did unintentional injustice. The new firm of Robinson & Orr, of Pittsburgh, is not, as then stated, successor to Bell & Orr, but an entirely new firm, including only Mr. Orr of the former. Messrs. Thomas W. Bell and S. P. Hegeman continue the business of the old firm under the name of Bell, Hegeman & Co., dealing in light rails and railroad supplies, and having their offices in the Monongahela House in Pittsburgh.

The J. W. Roebeling Sons Co. in Trenton, N. J., last week shipped a wire rope 6½ miles long and weighing 86,825 lbs. to the Third Avenue Railroad in New York. It is to be used on a section of that company's road which is to be operated on the cable plan.

The Tenite Co. in Stroudsburg, Pa., is now arranging for a large extension of its factory. The new building will be of stone 45 by 32 ft. and three stories high. In order to extend and thoroughly control the water-power the company has bought 130 acres of land adjoining its present property and is now enlarging its dam on the Pocono Creek, which flows through the property. When the improvements are completed the company will have a steam engine and two large turbine wheels as motive power.

The Pratt & Whitney Co., in Hartford, Conn., has recently furnished a 10-in. pillar shaper to the Chicago, St. Louis & Pittsburgh road; a twist drill grinding machine to the

Pittsburgh, Cincinnati & St. Louis; a 18-in. lathe, 6-ft. bed, with gibbed carriage, cross-feed, taper attachment, etc., to the Chicago, Burlington & Quincy, and several sets of taper reamers for the Manhattan Elevated shops in New York.

The Union Switch & Signal Co. in Pittsburgh has recently received a number of orders for switches and signals and has now many orders ahead to be filled.

### The Rail Market.

**Steel Rails.**—The market is a little stronger, and several large sales are reported, mostly for cash. A considerable amount of business is reported to have been placed at about \$30 per ton at mill, and the mills are now better supplied with orders than for some time past. There is also more demand for light rails. Quotations may be put at \$30@31 per ton at mill according to time of delivery and size of order, for the ordinary sections, and from \$32@36 for light rails.

**Rail Fastenings.**—Nominal quotations continue unchanged at \$2.35 per 100 lbs. in Pittsburgh for spikes, \$2.50@2.75 for track bolts and 1.70@1.80 cents per lb. for splice-bars. The market is still very dull, and orders are undoubtedly taken at something below these rates.

**Old Rails.**—The market for old iron rails is very dull. Some lots of foreign tee-rails have been offered at \$18@18.50 per ton in Philadelphia, but no considerable sales are reported.

### Blast Furnaces of the United States.

The quarterly statement of the *Iron Age* gives the condition of the blast furnaces of the United States on July 1, as follows:

	In blast.	Out of blast.	Not reported.	Total.
Charcoal.....	60	107	4	231
Anthracite.....	101	130	—	231
Bituminous or coke..	98	127	1	222
Total.....	279	424	5	708

The total weekly capacity of the 279 furnaces in blast is reported at 84,859 tons, and of the 424 out of blast at 87,701 tons. It is evident that, as in previous periods of depression, it is the smaller and older furnaces which are out of blast, while the larger and better appointed ones are at work.

The number of furnaces in and out of blast on July 1 for seven years past has been as follows:

	1884.	1883.	1882.	1881.	1880.	1879.	1878.
In blast.....	279	343	434	437	413	277	248
Out of blast.....	424	362	307	292	313	408	460
Total.....	703	705	741	729	726	685	708

The comparative numbers in and out of blast this year are very nearly the same as in 1879 and almost exactly reversed from those of 1881.

Three tables are also given, showing the comparative condition of the furnaces by the three quarterly reports of the current year, which we condense as follows:

	No. In blast.	Tons weekly.	No. Out of blast.	Tons weekly.
Jan. 1, 1884.....	288	83,225	414	83,530
April 1, 1884.....	269	83,561	432	82,679
July 1, 1884.....	279	84,859	424	87,701

The *Iron Age* says: "From these three tables it is possible to approximate the make of pig-iron for the first six months of the year. An average of the weekly capacity of the furnaces in blast of the three tables would be 84,548½ tons. Assuming this to be the weekly make, and multiplying by 26, we would have as the make for the six months 2,198,257 tons. The total make of pig-iron in 1883 was 5,146,972. This would indicate somewhat of a falling off in production."

### Frightful Railway Accident in England.

Cable dispatches announce one of the most fatal accidents that have taken place in England for several years. On July 16 the axle of the engine attached to an express train on the Manchester & Sheffield Railway broke near Penniston, and the train jumped the track and fell from a bridge which it was on at the time. Twenty-five persons were killed and 40 others more or less seriously injured. The scenes underneath the bridge after the train had fallen were most terrible to witness. The carriages were reduced almost to splinters. The groans of the men and the shrieks of the women and children were heartrending in the extreme. Some delay was experienced before the victims could be extricated from the wreck.

As this road has until lately used inside-connected engines exclusively, the cause of the disaster may be a broken crank axle. Penniston is on a down grade, and the express trains pass through it at a high speed.

### The Westinghouse Gas Well.

The flow of gas from the well sunk by Mr. George Westinghouse near his residence at East Liberty, Pittsburgh, still continues, and has not yet been checked. The flame from the gas well is 80 ft. in height, varying, however, with the condition of the atmosphere. The gas escapes from a 6-in. pipe 75 ft. high, so that the top of the jet when the engineer brought his instrument to bear on it was 155 ft. from the surface. A still, clear night makes every difference in the volume of the blaze.

The successful finding of gas at Pittsburgh has stimulated other establishments to try and supply themselves with this fuel. Two firms have already begun the drilling of wells, and four others will begin operations in a day or two.

At the Pennsylvania Tube Works, Messrs. Wilson, Walker & Co., and other works, the use of coal has been discontinued altogether.

### Philippine Islands Railroad.

The Spanish government is asking for tenders for the construction of a railroad from Manila to Lingayen on the northwest coast of the island of Luzon. The last day for receiving tenders is Oct. 1. These islands are fertile and densely populated, and with any sort of good management a railroad there should be a paying investment. But a government line, and especially a Spanish government railroad, hardly stands a fair chance.

### The Electrical Exhibition in Philadelphia.

The Committee on Exhibition of the Franklin Institute have just issued the fourth of their bulletins of the International Electrical Exhibition. It contains not only a quantity of valuable points about the Exhibition itself, but some items of general scientific interest.

The buildings are now about finished and ready for the preliminary arrangements to accommodate exhibits. The foundations for engines are completed in some localities, and in others the work is being pushed forward. The boilers, consisting of Babcock & Wilcox, Root & Abendroth, the Harrison boiler, Dickinson Manufacturing Co., Burnham, Parry, Williams & Co. and others are in process of erection. In fact, everything is being done that energy can accomplish to have the exhibition ready visitors on Sept. 2.

Although the space exceeds that at either the Paris or Vienna electrical exhibitions, it is said that it will all be needed, and the Superintendent expects to have to econo-

mize the room, so that all the electrical appliances can be represented.

No awards or premiums are to be given, but in place of these a report to the Institute will be prepared by a Board of Examiners. Expert examinations and competitive tests of different displays will be made. The following paragraph is from Rule 12 of the general regulations of the Exhibition:

"The Examiners shall be appointed by the Board of Managers and shall be men of acknowledged integrity, skill and experience in the class of goods assigned to them; and no Examiner shall serve on any class in which he may be an exhibitor or be otherwise directly interested. The mornings of each day until 15 minutes before the time of opening the Exhibition shall be appropriated by the Examiners, who shall be attended only by such persons as they may invite to be present."

The following are to be sections of the Board of Examiners:

- I. Dynamo-electric machines for lighting.
  - II. Dynamo-electric machines for plating.
  - III. Dynamo-electric machines for miscellaneous purposes.
  - IV. Dynamo-electric motors and transmission of energy.
  - V. Arc lamps.
  - VI. Carbons for arc lamps.
  - VII. Incandescent lamps.
  - VIII. Photometric measurements.
  - IX. Dynamometrical measurements.
  - X. Boilers.
  - XI. Steam engines.
  - XII. Gas engines and other prime movers.
  - XIII. Apparatus for high electro-motive force. 1. Lightning protection. 2. Electrostatic induction machines and induction coils. 3. Igniters.
  - XIV. Voltaic-electric apparatus. 1. Voltaic batteries and accessories. 2. Polarization and storage batteries.
  - XV. Electro-metallurgy.
  - XVI. Thermo and magneto-electric apparatus.
  - XVII. Electro conductors. 1. Telegraph and telephone wires and cables. 2. Electric light and power circuits. 3. Submarine cables.
  - XVIII. Underground conduits.
  - XIX. Electro telegraphs. 1. Morse systems. 2. Printing telegraphs. 3. Duplex, quadruplex, multiplex and harmonic systems.
  - XX. Telephones, microphones and radiophones.
  - XXI. Fire and burglar alarms and annunciators.
  - XXII. Electro-signal and registering apparatus.
  - XXIII. Electro-therapeutic apparatus.
  - XXIV. Electro-dental apparatus.
  - XXV. Applications of electricity to musical apparatus.
  - XXVI. Applications of electricity to artistic effects and art productions.
  - XXVII. Applications of electricity to warfare.
  - XXVIII. Instruments of precision.
  - XXIX. Educational apparatus.
- The practical applications of the dynamo-electric machines to the art of electro-metallurgy will be shown during the exhibition.

### A Mechanical Dictionary Needed.

There seems to be need for a dictionary of shop terms as well as of accepted scientific mechanical terms as applied to practice. Even in our most popular technical periodicals the terms used by a contributor from one portion of the country are sometimes unmeaning to readers in another portion.

Lack of definiteness is one of the faults of our mechanical nomenclature. In a recent publication of a mechanical paper, the question whether "spline," "key," and "feather" are synonymous was presented. Perhaps this will be as good as any other instance of our lax system, or lack of system. In the shop talk where the writer was "raised," a "spline" would mean a fixed projected portion retained in a shaft, and not specially connected with the pulley or other hub. Its synonym would be a "feather." A "key" would be a wedge-shaped fastener, with or without a head, fitting corresponding channels in the shaft and the hub, intended to secure the latter at some exact point. And yet "spline" and "key" are used indiscriminately by good mechanics. So long as these appellations are understood to have a definite meaning, they have their value; but this value may be confined to the shop, to the section of manufacturing establishments, or to the manufactories where persons mainly of one nationality are employed; outside they may be confusing.

In shop use why should a cylindrical rod of metal be at one time a "bar," again a "shaft," a "spindle," an "arbor"? Or if so used, why not have a shop thesaurus or lexicon that would give the derivation of the words and the reasons for their use. A "bar" shows its origin; it means to hinder, and is applicable to iron only in bars which may be used as obstacles. A "spindle" is derived from the spinning flax spindle older than our civilization, which supposes a tapering shaft rotating on its own axis. "Shaft" comes from our Saxon shaft, an arrow, implying straightness. "Arbor" comes from the Latin, a tree, or a piece to which something may be temporarily annexed.

A "mandrill" is a hand (*manus*, *L.*) drill. Is the clearer of bored holes a "reamer" or a "runner"? Is the top of a machinist's hammer a "pene," "pane," or "pene"? Why a "broach"? Why "drift pin" and "tamp pin"? The suggested glossary ought to contain the information that the ordinary screw-jawed wrench is not a monkey wrench because of any peculiar tricks it plays in use, but simply because Thomas Munkey, an English mechanic, invented it. Many other suggestions might be made to the ambitious mechanic who will undertake to simplify our mechanical nomenclature by the compilation of a dictionary and glossary of mechanical and shop terms.—*Scientific American.*

## General Railroad News.

### MEETINGS AND ANNOUNCEMENTS.

#### Meetings.

Meetings will be held as follows:

*Louisville, New Orleans & Texas*, special meeting in New Orleans, July 22, to complete the organization of the company.

*Manhattan*, adjourned special meeting, at the office in New York, Aug. 1.

*Metropolitan Elevated*, special meeting, at the office in New York, July 31.

*New York Elevated*, adjourned special meeting, at the office in New York, Aug. 1.

*Poughkeepsie & Southwestern*, annual meeting, at No. 97 Nassau street, New York, Aug. 20, at noon.

*St. Paul, Minneapolis & Manitoba*, annual meeting, in St. Paul, Minn., Aug. 15.

#### Dividends.

Dividends have been declared as follows:

*Illinois Central*, 4 per cent., semi-annual, payable Sept. 1. Transfer books close Aug. 13.

*Oregon Railway & Navigation Co.*, 1½ per cent., quarterly, payable Aug. 1. Transfer-books close July 21.

*Pacific Mail Steamship Co.*, 1½ per cent., quarterly, payable Aug. 1.

*St. Louis & San Francisco*, 3½ per cent., semi-annual, o



the first preferred stock, payable Aug. 1. Transfer-books close July 17.

Staten Island, 1 per cent., payable July 21. Transfer-books close July 17.

#### Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

*Traveling Passenger Agents' Association*, annual meeting, in Denver, Col., on Tuesday, Aug. 12.

*Western Association of General Passenger & Ticket Agents*, adjourned meeting, in Minneapolis, Minn., on Wednesday, Aug. 13.

*Train Dispatchers' Association*, preliminary meeting, to form an association, in Louisville, Ky., on Wednesday, Aug. 20.

*Master Car Painters' Association*, annual convention, in Boston, on Wednesday, Sept. 3.

*Road-Masters' Association of America*, annual convention, in Indianapolis, Ind., on Wednesday, Sept. 10.

*Association of American Railroad Superintendents*, semi-annual meeting, in Boston, on Tuesday, Sept. 16.

*National Association of General Passenger & Ticket Agents*, semi-annual convention, in Boston, on Tuesday, Sept. 16.

*New England Railroad Club*, first monthly meeting for the season, at the rooms in the Boston & Albany station in Boston, on Wednesday, Sept. 24.

*New England Road-Masters' Association*, annual convention, at White River Junction, Vt., on Wednesday, Oct. 8.

*General Time Convention*, fall meeting, at the Continental Hotel, Philadelphia, on Thursday, Oct. 9.

*Southern Time Convention*, fall meeting, at No. 46 Bond street, New York, on Wednesday, Oct. 15.

*American Street Railway Association*, annual convention, in New York, on Wednesday, Oct. 15.

#### Western Society of Engineers.

The 189th meeting was held at the Society rooms in Chicago on Tuesday, July 1. President Cregier in the chair.

The Secretary was requested to send to each member a few blank applications for membership, with the request that each member endeavor to induce friends or acquaintances, eligible as members or associates, to connect themselves with the Society.

It was voted that a committee be appointed to revise the Constitution and By-Laws. The chair appointed Messrs. Liljencrantz, Artlingstall and Wright as the committee. Amendments offered were referred to the Committee on Revision, and the meeting adjourned.

#### Train Dispatchers' Association.

A meeting of train dispatchers was held in Fort Worth, Tex., July 6, for the purpose of organizing a district association for the Southwest and appointing delegates to attend the convention to be held next month at Louisville to form a general convention of train dispatchers for the United States. Twenty-five train dispatchers were present, representing all the Missouri Pacific lines, the Fort Worth & Denver, the Houston & Texas Central, the Texas & St. Louis, the Galveston, Harrisburg & San Antonio, and the Southern Division of the Illinois Central. A draft for a constitution was submitted by Mr. W. W. Marshall. It was read and discussed by articles and was finally adopted. A number of letters were received from dispatchers who were not able to be present, but desired to join in the organization.

Several propositions were made by those present, some desiring action in regard to signals and train orders, and others proposing that the organization of the association should include a life insurance plan and other features, and also that it should be made an organization for the protection of members.

A committee consisting of one from each road represented was appointed to consider the matters brought before the meeting. The committee recommended that all members of the association use their best endeavors with their superior officers to limit the amount of work required of train dispatchers to eight hours per day. They also recommended that dispatchers in the association should help one another in every possible way, and in preference to persons who do not belong to the association. In regard to the proposed insurance feature of the association, it was recommended that it be laid over one year until the strength of the new organization could be seen. The reports were unanimously adopted and it was resolved that the delegates to the Louisville Convention should be instructed to advocate the adoption of these measures by the association there to be formed. Delegates were also instructed to work at the Louisville Convention in favor of a uniform system of train orders and a uniform system of station signals for train orders. After electing 13 delegates to represent the Southwestern Association at the convention in Louisville, and transacting necessary routine business, the association adjourned.

#### ELECTIONS AND APPOINTMENTS.

*Atlantic & Danville*.—Mr. C. Burruss, of Norfolk, Va., is now president of this company, succeeding Mr. J. M. Bailey resigned.

The headquarters of Mr. J. W. Rollins, Jr., Chief Engineer of the road, are now at Littleton, Sussex County, Virginia.

*Baltimore & Ohio*.—Mr. Bradford Dunham has been appointed Assistant to the Second Vice-President, with office in Baltimore. Mr. Dunham was formerly General Manager of the Trans-Ohio divisions of this road, but for a short time past has been General Manager of the Louisville & Nashville road.

*Boston & Lowell*.—General Superintendent Meilen has issued the following notice: "Mr. George W. Storer is appointed Assistant General Passenger Agent, to take effect July 1."

*Canada-Atlantic*.—Mr. D. C. Linsley, Manager, has issued the following circular:

"E. C. Winnie having resigned the position of General Freight and Passenger Agent for this company, A. G. Peden, the Auditor, will, in addition to his present duties, assume those of General Freight and Passenger Agent. Communications to be addressed to Mr. Peden under the respective official title."

*Cape Cod Ship Canal*.—At the annual meeting last week the following directors were chosen: Samuel Fessenden, Sandwich, Mass.; W. H. Clark, Jr., Lynn, Mass.; Edwin Reed, Beverly, Mass.; George S. Hall, Walter Lawton, Richard Phenix, Boston; Wm. F. Drake, New York. The board elected W. H. Clark, Jr., President; George S. Hall, Vice-President; W. Howland, of Boston, Clerk; Samuel Fessenden, Treasurer; S. A. McCall, of Boston, Counsel.

*Central Iowa*.—A meeting was held in Marshalltown, Ia., July 8, by stockholders who claim that the meeting held June 4 was illegal. At this last meeting a majority of the stock was voted and the following directors chosen: H. E. J. Boardman, G. T. M. Davis, Wm. Hanna, J. J. Higginson, J. P. Lyman, P. V. Rogers, Elijah Smith, Alfred Sully,

G. E. Taintor. The claims of the two boards will probably have to be passed on by the courts.

*Chicago, Milwaukee & St. Paul*.—General Superintendent J. T. Clark has issued the following circular: "Mr. A. J. Earling has been appointed Assistant General Superintendent in charge of the following divisions and their branches, viz.: Chicago & Milwaukee Division; Chicago & Council Bluffs Division, La Crosse Division; Prairie du Chien Division; Mineral Point Division; Wisconsin Valley Division, with office at Milwaukee, Wis. Mr. S. J. Collins has been appointed Superintendent of the Prairie du Chien and Mineral Point divisions and branches, with office at Milwaukee. Hereafter the Chicago & Council Bluffs division in Illinois and Iowa will be operated as one division, and R. B. Campbell has been appointed Superintendent of same, with office at Marion, Ia. The jurisdiction of L. B. Beardsley, Assistant Superintendent of the Chicago and Council Bluffs Division is hereby extended over the entire division."

Mr. W. E. Beecham, formerly Car Service Agent of this company, has been appointed Assistant Superintendent of the Hastings & Dakota Division.

*Chicago & West Michigan*.—The Detroit Free Press of July 13 says: "Mr. J. B. Mulliken has been elected Vice-President of the Chicago & West Michigan Co. and appointed General Manager pro tem to succeed Geo. C. Kimball, who retires on the 15th inst. Mr. Mulliken still retains his position as General Manager of the Detroit, Lansing & Northern. Though his position on the Chicago & West Michigan is announced as a temporary one, there is no doubt that the appointment will be made permanent, and Mr. Mulliken will hereafter have the management of both roads. There is no foundation for the report, however, that the properties are to be consolidated. Both are substantially owned by the same Boston parties, and the high estimation in which Mr. Mulliken is held by them is shown by the fact that both are intrusted to him."

*Cincinnati & Southeastern*.—At the annual meeting in Newport, Ky., July 1, the following directors were chosen: R. W. Wilson, Newport, Ky.; A. C. Armstrong, C. H. Brayton, J. E. French, Cleveland, O.; J. H. Clark, Scio, N. Y.; J. V. Patton, J. W. Rowland, Emletton, Pa.; J. M. Dickey, H. M. Hughes, C. W. Mackey, Charles Miller, Isaac Reineiman, E. H. Sibley, Franklin, Pa. The board elected Charles Miller, President; C. W. Mackey, Vice-President; H. M. Hughes, Secretary; Isaac Reineiman, Treasurer.

*Denver, Western & Pacific*.—Mr. H. P. Bennett, of Denver, Col., has been appointed Receiver in place of A. A. Egbert, on petition of the bondholders.

*Fitchburg*.—Mr. A. V. Fisher has been appointed Traveling Passenger Agent, with headquarters at No. 250 Washington street, Boston.

*Hannibal & St. Joseph*.—The following order from General Manager J. F. Barnard is dated St. Joseph, Mo., July 10.

"Mr. C. C. Chandler is hereby appointed Chief Engineer vice Mr. T. L. Dunn, resigned to accept another position. This appointment takes effect on this date, and those having to do with new works, and the repairs or renewals of bridges and buildings will report to and receive instructions from Mr. Chandler and be governed accordingly."

Mr. Chandler is also Chief Engineer of the Kansas City, St. Joseph & Council Bluffs. Mr. Dunn's appointment on the Louisville, New Albany & Chicago road was noted last week.

Mr. S. E. Crance succeeds Mr. Dunn as Superintendent of the road, with office in Hannibal, Mo., to date from July 15.

*Harper & Western*.—The directors of this new company are: J. F. Goddard, James Hagerman, George B. Harris, A. A. Robinson, E. Wilder, Topeka, Kan.; W. B. Strong, A. E. Touzalin, Boston. They are all connected with the Atchison, Topeka & Santa Fe.

*Houston, East & West Texas*.—Mr. W. H. Wentworth has been appointed Assistant General Manager, with office in Houston, Tex. Mr. John T. Burke has been appointed Assistant Road-Master.

*Kansas City, St. Joseph & Council Bluffs*.—Mr. J. R. Hardy is appointed Superintendent of this road, with office in St. Joseph, Mo. Mr. A. D. Barnard succeeds Mr. Hardy as Assistant Superintendent, with special charge of the line between Harlem and Kansas City.

*Lockport & Buffalo*.—This company has elected Thomas T. Flager, President; Lewis S. Payne, Vice-President; Joseph A. Ward, Secretary and Treasurer. The road is leased to the New York, Lake Erie & Western.

*Mahopac Falls*.—Mr. Wm. H. Case is Engineer of this road, with office at Mahopac Falls, Putnam County, N. Y. Mr. H. M. Braem is Treasurer, with office at No. 69 Wall street, New York.

*Memphis & Little Rock*.—Mr. James Harrington is appointed Treasurer for the Receiver in place of John W. Goodwin, resigned.

*Minneapolis, Minnehaha & Fort Snelling*.—The office of this new company is in Minneapolis, Minn.; the officers are: Wm. McCrory, President; Roellif Brinkerhoff, Vice-President; T. J. Janney, Secretary; S. E. Neiler, Treasurer.

*Minnesota, St. Croix & Wisconsin*.—The following are the officers of this new company: President, C. L. Colby; directors, Joseph Colby, W. G. Fitch, F. Abbott, G. B. Dunbar, Howard Morris; Secretary, Howard Morris. The company is controlled by the Wisconsin Central.

*Missouri Pacific*.—The following changes are made, consequent upon the separation of the Wabash system for this company's lines: Third Vice-President H. M. Hoxie assumes the general management of the Missouri Pacific and its leased and controlled lines, in place of Fourth Vice-President A. A. Talmage, who has gone to the Wabash. General Passenger Agent H. C. Townsend is made General Ticket Agent also, in place of Mr. F. Chandler, who also goes to the Wabash. Mr. G. W. Lilly is appointed General Freight Agent; he was recently Freight Traffic Manager of the whole system, including the Wabash.

Mr. J. B. Flanders has been appointed Trainmaster of the Lexington & Southern and the Kansas & Arizona divisions, with office at Harrisonville, Mo., in place of A. J. Leed, resigned.

*Mobile & Girard*.—At the annual meeting in Girard, Ala., July 2, the following directors were chosen: John Peabody, N. N. Curtis, F. H. Mitchell, Columbus, Ga.; N. P. Banks, Guerryton, Ala.; J. D. Murphree, C. S. Lee, Troy, Ala. At a subsequent meeting the board elected the following officers: President, W. G. Raoul; Superintendent, W. L. Clark; Secretary and Treasurer, J. M. Frazer.

*New York & Greenwood Lake*.—Mr. W. B. Parsons, Jr., has been appointed Road-master, with charge of all track, bridges and buildings. He was recently Supervisor of the Rochester Division of the New York, Lake Erie & Western road.

*New York, West Shore & Buffalo*.—Mr. D. B. McCoy is appointed Superintendent of the Buffalo Division, with office in Buffalo, N. Y., in place of F. E. Merrill, resigned. Mr. McCoy was recently on the Pittsburgh Division of the Baltimore & Ohio, and was formerly with the Pennsylvania Company.

*North Carolina*.—The Governor of North Carolina has appointed the following state directors in this company: Donald McRae, W. F. Kornegay, R. F. Hoke, Kerr Craige, Armistead Burwell, John L. Morehead, Duncan Cameron, Robert W. Thomas; C. M. Busbee, state proxy.

*Oregon Railway & Navigation Co.*—Mr. Elijah Smith has been chosen President of this company in place of Mr. T. J. Coolidge, resigned.

*Union Railway Co. of Chattanooga*.—Mr. C. E. James is President of this company and Mr. D. J. O'Connell is General Manager.

*Vicksburg & Meridian*.—At the adjourned annual meeting in New York, July 16, the old directors were all re-elected, and the meeting adjourned further until Aug. 14 next.

*Wabash, St. Louis & Pacific*.—The following appointments are announced by the Receivers, taking effect July 14: A. A. Talmage, General Manager; James Smith, General Traffic Manager; F. Chandler, General Passenger Agent. The management is now entirely distinct from that of the Missouri Pacific.

Mr. Talmage was recently Fourth Vice-President of the Missouri Pacific and has served as General Superintendent and General Manager of that road. Mr. Chandler was General Ticket Agent of the same road and Mr. Smith was General Freight Agent of the Chicago & Alton.

*Warrior Coal Fields*.—At a meeting held in Birmingham, Ala., July 1, the following directors were chosen for this new company: Thos. H. Woods, W. H. Hardy, J. P. Walker, John A. Lewis, L. A. Ragsdale, M. L. Stansel, J. M. Hinds, J. J. Hinds, D. N. Cooper.

#### PERSONAL.

—Mr. John W. Goodwin has resigned his position as Treasurer for the Receiver of the Memphis & Little Rock road.

—Mr. A. C. Winnie has resigned his position as General Freight and Passenger Agent of the Canada-Atlantic road.

—Mr. George C. Kimball has resigned his position as General Manager of the Chicago & West Michigan road, which he has held for several years.

—Mr. A. A. Talmage retires from his position as Fourth Vice-President of the Missouri Pacific Co., to take charge of the Wabash, St. Louis & Pacific road.

—Mr. C. P. Huntington, Vice-President of the Central Pacific Co., and President of the Chesapeake & Ohio, was married in New York, July 12, to Mrs. A. D. Worsham, of that city.

—Mr. Percy F. Smith has sold all his interest in the Pittsburgh Railway Reporter, and has transferred that paper to Mr. J. G. Fulton, who succeeds him as editor and manager of that paper.

—Mr. T. Jefferson Coolidge has resigned his position as President of the Oregon Railway and Navigation Co. He has held the office only a few months. Mr. Coolidge resigns in order to accept the position of Treasurer of the Amoskeag Mills Corporation.

—Mr. John J. Gormley has resigned his position as General Agent in Charlotte, N. C., of the Richmond & Danville and its controlled lines, to take effect Aug. 1. Mr. Gormley was formerly President of the Atlantic, Tennessee & Ohio Co., and has held his present position since that road was leased to the Charlotte, Columbia & Augusta.

—Mr. A. H. Braithwaite, whose name is familiar in connection with the early history of the locomotive in England, died recently in Gisborne, New Zealand, aged 83 years. Mr. Braithwaite designed and built the "Novelty," which was one of the competitors of Stephenson's "Rocket" in the famous locomotive trial on the Liverpool & Manchester road.

—Mr. J. H. McCreery, formerly General Counsel of the Pittsburgh & Lake Erie, the Pittsburgh Junction and the Sharpville Railroad companies, has removed from Pittsburgh to New York, and has formed a partnership with Mr. C. P. Crosby, of that city, with offices at No. 160 Broadway. Mr. McCreery is well known in Pittsburgh, where he has been engaged in many important cases as counsel for railroad companies, and has had much experience in corporation law.

—It is now believed that the death of W. R. McGill, President of the Cincinnati & Eastern Co., which was noted last week, was intentional, and not accidental. Mr. McGill, it will be remembered, fell from a baggage car on his road while it was passing over a trestle some 70 ft. high, but the present belief is that he jumped from the car purposely. It has been discovered that he has been raising money to a considerable amount by forged notes, or notes with forged indorsements. These notes were not discounted, but were used as collateral for loans, and several have already been found of which both signatures and indorsements are forged, and it is said that in other ways he raised money by false representations. Some \$50,000 of such loans have already been brought to light, and it is believed that a considerable amount more will be found, as he has borrowed money wherever he was known. He was generally believed to be a man of considerable property, worth from \$150,000 to \$200,000, which was a large fortune in the community where he had lived. It appears, however, that all of this was invested in the Cincinnati & Eastern road, and most of it probably lost, together with such amounts as he had been able to raise in the manner mentioned above. It is supposed that he expected to sell out the road, or his interest in it, shortly, when he would be able to take up the fraudulent loans, but one of his creditors having accidentally discovered the nature of the collateral placed with him, a general exposure was inevitable, and the probability is that he killed himself to avoid the results.

#### TRAFFIC AND EARNINGS.

##### Central Iowa Traffic Association.

The General Managers of the lines interested in the Central Iowa Traffic Association, met in Chicago, July 8. All the lines were represented except the Wabash. It was determined to reorganize the association and to go on without the Wabash if that line did not agree to become a party to the agreement. The adjustment of rates was referred to the general freight agents who met in Milwaukee on the following day and completed their work. Whether the association can be successfully maintained without the Wabash is a question remaining to be solved.



### Railroad Earnings.

Earnings for various periods are reported as follows:

Six months ending June 30:				
	1884.	1883.	Inc. or Dec.	P. c.
Central Pacific ..	\$10,479,000	\$11,545,125	D. \$1,066,125	9.3
Chas. Col. & A. ..	357,899	393,779	D. 35,880	9.1
Chas. & Ohio ..	1,708,247	1,790,859	D. 82,612	4.6
Chas. Ind. St. L. & Chi. ..	1,110,153	1,158,132	D. 47,979	4.1
Chas. W. & Balt. ..	793,578	801,837	D. 8,259	8.3
Cleve. A. & C. ..	225,604	250,431	D. 24,827	9.9
Col. & Greenville ..	298,855	366,845	D. 67,990	18.5
Eliz. Lex. & B. S. ..	324,391	316,927	I. 7,464	2.4
Ev. & Terre H. ..	327,646	338,238	D. 10,592	3.1
Flint & Pere M. ..	1,311,495	1,321,002	D. 9,507	4.0
Grand Trunk ..	7,908,569	9,322,379	D. 1,413,810	17.8
G. B. W. & St. P. ..	170,841	191,021	D. 20,180	10.6
Gulf. Col. & S. F. ..	797,658	839,700	D. 42,042	4.7
Ill. Cent. Ill. lines ..	2,882,650	3,035,516	D. 152,866	5.0
Iowa lines ..	1,909,502	1,834,150	D. 75,352	1.3
Iowa lines ..	795,747	930,627	D. 134,780	14.1
Ind. Bloom. & W. ..	1,221,621	1,387,514	D. 165,893	12.0
Ind. L. S. & W. ..	525,895	475,813	I. 50,082	10.5
Ind. Mil. & Northern ..	255,428	249,690	I. 5,738	11.2
Ind. Peoria, Dec. & E. ..	363,284	333,989	I. 29,295	8.4
Ind. Rich. & Dan. ..	1,825,102	1,764,806	I. 60,296	3.4
Ind. St. L. Ft. Scott & ..	223,452	80,585	I. 133,867	140.4
Ind. Wichita ..	190,934	146,364	I. 44,570	30.5
Wis. Central ..	717,802	678,272	I. 39,530	5.8
Five months ending May 31:				
Bur. C. R. & No. ..	\$1,072,325	\$1,064,242	I. 8,083	0.8
Net earnings ..	309,058	290,480	I. 18,578	16.0
Denver & R. G. ..	2,450,715	2,692,428	D. 241,711	9.0
Net earnings ..	375,528	939,721	D. 564,193	60.0
Des M. & Ft. D. ..	132,264	113,738	I. 18,526	16.5
Net earnings ..	33,161	16,579	I. 16,582	100.0
E. Ten. Va. & G. ..	1,556,400	1,536,393	I. 20,007	1.3
Net earnings ..	538,586	513,813	I. 24,773	4.8
Shenandoah Val. ..	294,164	286,251	I. 7,913	2.7
Net earnings ..	30,121	25,725	I. 4,396	16.6
Utah Central ..	388,434	494,050	D. 105,616	21.6
Net earnings ..	142,174	256,770	D. 114,596	44.6
Month of May:				
Bur. C. R. & No. ..	\$221,573	\$208,672	I. 12,901	6.2
Net earnings ..	57,457	50,912	I. 6,545	12.8
Chas. Ind. St. L. & Chi. ..	205,585	205,540	I. 45	0.02
Net earnings ..	80,183	70,032	I. 10,151	14.5
Denver & R. G. ..	508,754	626,018	D. 117,264	9.1
Net earnings ..	140,090	217,459	D. 77,369	32.9
Des M. & Ft. D. ..	24,916	20,044	I. 4,872	24.3
Net earnings ..	4,913	4,073	I. 840	20.6
E. Ten. Va. & G. ..	295,461	283,157	I. 12,304	4.3
Net earnings ..	99,761	101,722	D. 1,961	1.9
Shenandoah Val. ..	61,400	72,448	D. 11,048	15.2
Net earnings ..	6,199	18,493	D. 12,294	67.0
Utah Central ..	85,260	97,671	D. 12,411	12.7
Net earnings ..	42,414	51,127	D. 8,713	17.0
Month of June:				
Central Pacific ..	\$1,789,000	\$2,129,236	D. \$340,236	19.0
Chas. Col. & A. ..	38,299	44,094	D. 5,795	13.2
Chas. & Ohio ..	258,800	323,845	D. 65,045	20.1
Chas. Ind. St. L. & Chi. ..	197,313	199,929	D. 2,616	1.3
Chas. W. & Balt. ..	122,100	149,494	D. 27,394	18.2
Cleve. A. & C. ..	44,331	46,543	D. 2,212	4.7
Col. & Greenville ..	28,148	31,755	D. 3,607	11.3
Eliz. Lex. & B. S. ..	57,800	56,022	I. 1,778	3.2
Ev. & Terre H. ..	55,990	57,884	D. 1,894	3.3
Flint & Pere M. ..	178,810	206,322	D. 27,512	13.4
Grand Trunk ..	1,363,876	1,493,035	D. 129,159	15.3
G. B. W. & St. P. ..	25,097	34,171	D. 8,474	24.9
Gulf. Col. & S. F. ..	127,784	131,784	D. 4,000	3.2
Ind. Bloom. & W. ..	197,013	217,574	D. 20,561	9.4
Ind. L. S. & W. ..	88,600	87,205	I. 1,395	1.5
Ind. Peoria, Dec. & E. ..	50,626	48,474	I. 2,152	4.4
Ind. Rich. & Dan. ..	251,819	258,091	D. 6,272	2.7
Ind. St. L. Ft. Scott & ..	81,549	65,352	I. 16,197	24.9
Ind. Wichita ..	33,362	16,303	I. 17,059	104.6
Western N. C. ..	23,928	23,291	I. 6,367	27.3
Wisconsin Cent. ..	102,677	118,090	D. 15,413	13.1
First week in July:				
Bur. C. R. & No. ..	\$45,499	\$43,604	I. \$1,895	4.3
Canadian Pac. ..	117,000	131,000	D. 14,000	10.7
Chi. & Alton ..	151,475	150,735	I. 740	0.5
Chi. & East. Ill. ..	31,145	25,366	I. 5,779	22.8
Chi. Mil. & St. P. ..	416,000	425,488	D. 9,488	2.2
Chi. & Nor. West ..	400,600	456,600	D. 56,000	10.9
Chi. St. P. Min. & C. ..	94,200	81,100	I. 13,100	16.3
Long Island ..	111,855	106,549	I. 5,306	4.9
Louis. & Nash. ..	234,385	232,870	I. 1,515	0.6
Northern Pac. ..	220,580	188,700	I. 31,880	14.4
Roch. & Pitts. ..	22,698	14,335	I. 8,363	58.4
St. L. & San F. ..	73,100	55,300	I. 17,800	32.3

\* Deficit.

Weekly earnings are usually estimated in part, and are subject to correction by later statements.

### Grain Movement.

For the week ending July 5, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for eight successive years:

Northwestern shipments.				
Year.	Receipts.	Total.	By rail.	P. c.
1877 ..	2,550,086	3,341,924	669,103	20.0
1878 ..	3,118,002	2,967,635	922,931	31.1
1879 ..	4,250,273	4,135,059	1,440,681	34.9
1880 ..	4,500,927	6,375,678	1,605,899	25.2
1881 ..	5,258,827	6,201,411	2,203,463	35.2
1882 ..	1,886,422	1,932,340	815,201	42.2
1883 ..	2,871,084	3,369,588	1,000,095	29.7
1884 ..	2,714,322	2,740,147	1,147,874	41.9

The receipts of the Northwestern markets for the week this year were smaller than in the corresponding week of any previous year, except 1882, since 1877, but only 157,000 bushels less than last year. They were 1,058,000 bushels less than in the previous week, but a large falling off in the week including July 4 is common.

The shipments of these markets were less than any corresponding week covered by the table except 1882, and 2,128,000 bushels less than in the previous week of this year. There is not usually much falling off in shipments at this time. The rail shipments, though larger than last year, were not half as great as the week before, and the smallest since last November. This was the first week when the advance in the rate to 20 cents had an effect. The shipments down the Mississippi were 203,525 bushels. The receipts at Atlantic ports for the week were the largest since 1881, but less than in any of the four years previously.

The exports from Atlantic ports for the week have been:

	1880.	1881.	1882.	1883.	1884.
Flour, bbls. ....	145,636	98,837	72,782	102,150	99,522
Grain, bu. ....	5,077,047	3,858,122	986,812	1,918,999	1,588,496

Total, bu. .... 5,733,009 4,303,888 1,314,331 2,379,674 2,036,345

Thus the total exports were this year a little less than last, one-half greater than in 1882, 52½ per cent. less than in 1881, and 64 per cent. less than in 1880.

San Francisco exports for the California crop year, which ends June 30, were as follows, flour in barrels and wheat in bushels, flour being reduced to wheat in the totals:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Flour ..	1,257,001	1,099,651	I. 157,350	14.3
Wheat ..	18,836,830	24,330,327	D. 5,493,497	22.0

Total bushels .... 25,121,835 29,834,582 D. 4,712,747 15.8

Exports of California barley by sea for the crop year ending June 30 were 295,726 cwt., against 225,278 cwt. for 1882-83, an increase of 70,448 cwt., or 31.3 per cent.

### Coal.

Coal tonnages for the week ending July 5 are reported as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Anthracite ..	86,200	274,350	D. 188,090	68.5
Eastern bituminous ..	151,854	149,497	I. 2,357	1.6
Coke ..	46,073	47,377	D. 1,304	2.8

Bituminous and coke tonnages are reduced by the general holiday falling in the week; practically it was one of only four working days.

For the anthracite trade the week was one of general stoppage. It is said that the restriction of output in August has been talked over, but no official action has been taken.

The coal tonnage of the Pennsylvania Railroad for the week ending July 5 was:

	Coal.	Coke.	Total.
Line of road ..	115,475	41,388	156,863
From other lines ..	46,252	4,685	50,937
Total ..	161,727	46,073	207,800

The total tonnage this year to July 5 was 6,639,802 tons, against 6,020,791 tons to the corresponding date last year, showing an increase of 619,011 tons, or 10.3 per cent.

Cleveland coal receipts for the six months ending June 30 are reported by the Iron Trade Review as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Anthracite ..	46,276	32,189	I. 14,087	44.0
Bituminous ..	723,427	589,446	I. 133,981	22.8
Coke ..	59,713	61,638	D. 1,925	3.1
Total ..	829,416	683,273	I. 146,143	21.4

The statement does not separate lake and rail receipts. Shipments for the six months were: Anthracite, 2,385; bituminous, 200,243; coke, 819; total, 203,447 tons, an increase of 55,773 tons, or 37.7 per cent., over last year.

A corporation to be known as the Sonora Anthracite & Development Co. was perfected in this city yesterday, having for its object the development of the beds and fields of coal in Sonora, Mexico. The title or concession is derived from the Mexican Government to the extent of 5,000,000 acres of mineral land with all the contents except gold and silver. These lands are located near the city of Guaymas.

The following named gentlemen are elected directors: N. W. Spaulding, Daniel E. Hays, Colonel C. P. Dickinson, P. McAras and Alexander G. Hawes. The capital stock is \$10,000,000 divided into 100,000 shares of \$100 each. The principal place of business will be San Francisco and the work of development will be immediately inaugurated. It has been long known that anthracite of a superior quality existed in beds of large extent in Sonora, Mexico, but owing to the lack of railroad facilities and want of capital the discovery has never before been utilized, but it is now due to American capital and enterprise that this valuable commodity can be laid down in this city for less than \$8 per ton, where it now costs \$12.—*San Francisco Alta.*

Cumberland coal shipments for the week ending July 12 were 60,543 tons. The total shipments this year to July 12 were 1,401,725 tons, against 1,210,353 tons to the corresponding date last year; an increase of 191,372 tons, or 15.8 per cent.

Anthracite coal tonnages for June and the six months ending June 30 are reported as follows by the Official Accountant, Mr. John H. Jones, the statement including the entire production of anthracite coal, excepting that consumed by employees, and for steam and heating purposes about the mines:

	June.	Five months.	June.	Five months.
Phil. & Read ..	708,089	1,039,536	4,707,532	5,390,654
Lehigh Valley ..	386,044	529,927	2,590,644	2,848,728
Del. Lac. & W. ..	312,459	415,032	2,239,088	2,217,068
Del. & H. Can. Co. ..	206,611	287,348	1,422,550	1,531,161
Penn. R. R. ..	276,919	253,672	1,444,430	1,208,909
Penn. Col. Co. ..	83,968	124,516	590,139	633,183
N. Y. L. E. & W. ..	24,459	33,561	164,871	161,004
Total ..	2,020,179	2,670,582	13,150,253	14,010,767

The Reading statement for the six months includes 1,745,398 tons carried by the Central Railroad of New Jersey during first five months of 1883. Lehigh Valley tonnage includes the production of the mines of the State Line & Sullivan Co., amounting to 8,673 tons in June.

In addition to the amount above there were 33,595 tons transported from mines by the Delaware & Hudson Canal Co. during June, which is included in tonnage of other interests.

The stock of coal on hand at tidewater shipping points June 30, 1884, was 704,838 tons; on May 31, 1884, 858,837 tons; decrease, 153,999 tons, or 21.8 per cent.

The decrease for June was 641,423 tons, or 24 per cent.; for the six months, 851,514 tons, or 6 per cent. The Pennsylvania Railroad Co. alone shows a considerable gain.

### Cotton.

Cotton movement for the week ending July 11 is reported as follows, in bales:

	1884.	1883.	Inc. or Dec.	P. c.
Interior markets ..	1,482	6,647	D. 5,165	77.7
Receipts ..	7,064	12,532	D. 5,468	43.2
Shipments ..	31,941	68,762	D. 36,821	53.5
Receipts ..	7,578	11,024	D. 3,446	31.3
Exports ..	40,747	25,905	I. 14,842	57.3
Stock, July 11 ..	282,540	353,674	D. 71,134	20.1

The total shipments from plantations for the cotton year, from Sept. 1 to July 11, are estimated at 5,643,264 bales; the decrease, as compared with last year, is 1,280,697 bales; the increase, as compared with 1881-82, is 320,184 bales, and the decrease from 1880-81 is 818,745 bales.

### Boston Traffic Notes.

The Boston & Albany received from the New York Central at Albany 13,373 freight cars in June and 10,741 cars were despatched from Boston during the same month.

### Inter-State Regulation.

Last spring Merrill & Co.'s Express, doing business between Keene and Boston, via Nashua, applied to the Boston & Lowell Railroad for increased facilities. These were offered at a rental of \$12,000 a year, and an indemnifying bond of \$50,000. The express company considered both the rental and the bond excessive, and applied to the Railroad Commissioners for relief. The board heard the evidence and decided that the express company should pay a rental of \$5,020 per annum and furnish a bond of \$15,000. The railroad thereupon refused to accede to the decision, and canceled the old contract, thus compelling the express company to close up its business. Merrill & Co. proposed to bring suit against the railroad for damages, and they applied to the Railroad Commissioners to enforce their former decision. At the hearing counsel for the railroad took the ground that the Commissioners could compel them to carry the freight of the express company only to the state line, which they were willing to do, but they denied the right of the Board to compel them to transport the freight over such portion of the road as was in the state of Massa-

chusetts. The Board decided the case in favor of the express company, but the railroad company paid no heed to it. Thereupon the New Hampshire Commissioners turned over all the papers to Attorney-General Mason W. Tappan, and he writes the Commissioners an acknowledgment, which is just given to the public, in which he says: "It seems to me that the legal position you take, and the conclusions to which you have arrived, are correct; and I will, at an early day, institute the necessary legal proceedings to carry the questions arising in the case to the Supreme Court, to the end that a compliance with the laws by said railroad may be insured."—*Boston Advertiser.*

### East-Bound Rates.

On July 21 the new



of the money and compensation for any trouble he might be put to in obtaining it."

If this were not the conclusion and language of so eminent a lawyer as Chief Justice Cooley we might venture to question its soundness in law, as we do venture to criticize its wisdom in policy. To compel a passenger, who offers what he has paid for as a proper ticket to pay again or to leave the car if he has not the money or does not choose to part with it, is to allow the railroad to take advantage of its own wrong, for its ticket sellers and collectors, being alike its agents, must be supposed to be a unit. To require a passenger to part with his money and then await the pleasure of the railroad company to return it, or to compel him single-handed to sue a corporation with able attorneys and ample means and fight them through all the courts is not the kind of protection to the citizens which the laws of a free country should afford. Granted that most railroad managers will be found fair, honest and prompt in the consideration of such cases brought to their attention, the fact remains that these decisions give them an autocratic power that might be abused a thousand times before a man would be encountered who should have the courage and means to sue them for principle's sake. In a case very similar to this Michigan case (Murdock vs. Boston & Albany Railroad Co.), the Supreme Judicial Court of Massachusetts rendered a decision on the 25th of last month in favor of the plaintiff. The case is not yet officially reported, so the reasoning of the learned tribunal must be awaited; but we cannot doubt that it proceeds upon the broad ground that when the passenger is guilty of no fault, not even of negligence, the company shall not be permitted to visit upon him the consequences of the ignorance or conflicting opinions of its own servants, nor put him to delay in his journey, shortage in his purse, vexation in his correspondence or expense in litigation. It will be far better for railroads to occasionally lose a fare than for the people to be subjected to oppression or even to have cause for thinking that they may be subjected to it.—*Boston Advertiser*.

#### OLD AND NEW ROADS.

**Alabama & Cincinnati.**—This company has filed articles of incorporation to build a railroad from Anniston, Ala., northwest to Gadsden, about 35 miles. At Gadsden it will connect with the short road running from that place westward five miles to Attalia, on the Alabama Great Southern road.

**Atlantic & Danville.**—The track on this road is now laid for three miles westward from the late terminus at Waverly, Va., and the grading is completed to the Nottoway River, 12 miles from Waverly. From Nottoway the work is to be pushed to Bellfield, 35 miles from Waverly, and it is expected that the road will be completed to that point early in the fall. Tracklaying will be resumed on the graded portion of the road during the present month. The grading so far has been done by the company directly, but it is intended to let contracts for the work west of the Nottoway River.

**Atlantic & Pacific.**—The following circular has been issued by this company: "The holders of subscription certificates under this company's circular of Jan. 20, 1882, have paid 35 per cent., as previously called, and from the sale of first-mortgage bonds, in accordance with its option, the company has received 52½ per cent., leaving a final balance of 12½ per cent. due from the subscribers to the company. This balance is hereby called, payable at the Boston Safe Deposit & Trust Co., as follows: 10 per cent. on July 30, 1884; 2½ per cent. on Aug. 30, 1884. (Upon payment of 40 per cent. by subscribers, delivery of the securities becomes due as provided by the terms of subscription.) When all assessments due to July 30, 1884, inclusive, have been paid, the securities called for by the subscription certificates will be delivered upon each block, as follows: First-mortgage bonds, Western Division, \$240; first-mortgage bonds, Central Division, \$24; capital stock, \$176. All the remaining securities called for will be delivered Aug. 30, 1884, upon payment of the 2½ per cent. due on that date as above, and interest will be adjusted at that time. Scrip will be given for fractions. All deliveries will be made, and indorsed upon the certificates by the Boston Safe Deposit and Trust Co., and the certificates must be surrendered to the trust company upon final delivery of the securities. The 10 per cent. called for on July 30, 1884, amounts to \$88 on each certificate. Subscribers, who so desire, may, upon five days' notice, pay the entire 12½ per cent. on July 30, 1884, and in that case all the securities will then be delivered, interest adjusted, and the certificates surrendered. In this case there will be \$110 in all due on each certificate, and the securities so deliverable therefor will be as follows: First mortgage bonds, Western Division, \$380; first mortgage bonds, Central Division, \$38; income bonds, Western Division, \$495; income bonds, Central Division, \$49.50; capital stock, \$440.

**Bentonville.**—This railroad extends from Bentonville Junction on the St. Louis & San Francisco road to Bentonville, Ark., 5½ miles. Its trains run over the St. Louis & San Francisco track, three-quarters of a mile, from Bentonville Junction to Rogers, at which station the connection is made. The road was completed in May, 1883, and has since been in successful operation.

**Boston & Lowell.**—The Massachusetts Railroad Commissioners have granted a certificate of expediency to this company for the extension of its Woburn Branch to Winchester, Mass. The question of crossing several highways at grades is still to be considered.

**California Southern.**—A meeting of the stockholders was held in Boston, July 10. At this meeting it was stated that of the \$250,000 needed to repair the road \$126,400 had been subscribed. An appeal being made to the stockholders to increase the subscription 18 additional signatures were obtained to the list, and the committee was instructed to solicit further contributions.

President Nickerson has issued a circular to the stockholders, in accordance with the action of their meeting held last week. It is as follows:

"In accordance with the recommendation of the committee, herewith inclosed, this company will accept subscriptions on the terms set forth in their circular No. 4, for any amount which the security-holders may see fit to loan, and where the amount is less than \$500, scrip will be issued for the same, which will draw interest and commission, and shall be fundable in the notes of the company at any time, upon presentation at this office in sums of \$500 or multiples thereof. While the company would be glad to receive subscriptions for any amount, they make no claim for any subscription beyond 10 per cent. of the stock or bonds held."

**Carolina Central.**—Arrangements are being made to build a branch from this road at Lumberton, N. C., southward to Ashpole Institute, a distance of 11 miles.

**Central Iowa.**—The *Boston Advertiser* of July 14 says: "On June 4 a meeting of stockholders of the Central Iowa Railway Co. was held and Alfred Sully, of New York, and

others were chosen directors, and resolutions were passed advising the consolidation of the Peoria & Farmington with the Central and also the establishment of terminal facilities at Keithsburg. But it is claimed that this meeting was illegal because it had been represented that the election would be postponed. Consequently a majority of the stock was not represented. On the 8th inst. another meeting was held at Marshalltown by a number of Eastern stockholders representing 47,000 of the 92,047 shares of common and first and second preferred stock. The Sully faction withdrew from the meeting and the attorneys for the Eastern holders elected, by casting their clients' proxies, the following board of directors: Elijah Smith, G. E. Tainter, Alfred Sully, J. J. Higginson, P. V. Rogers, J. P. Lyman, William Hanna, H. E. J. Boardman, G. T. M. Davis, W. M. Simes. A vote was passed rescinding the resolutions of the June meeting, and it is said that legal measures will be taken to resist any action that may be attempted by Mr. Sully or his board to exercise authority."

**Central Pacific.**—Vice-President Huntington states that he has advised his associates to pass the dividend for the last half year, and it is probable that no dividend will be paid. The business of the half year has been light and the expenses have been largely increased by the floods in California and New Mexico, doing considerable damage to the road and interrupting traffic.

On the extension of the California & Oregon Division the grading is now completed for 40 miles northward of the old terminus at Reading, Cal. It is understood that no work will be done beyond this point for the present, and at any rate nothing will be done until work is resumed on the Oregon end of the line. A town called Delta has been laid out at the new terminus. Track is laid for 86 miles north of Reading, and is expected to reach Delta in a short time. The force employed on the extension of the road is being gradually discharged. From Delta north to the Oregon line the distance is about 100 miles, including some very heavy work and several tunnels. On nearly all the tunnels, however, a good deal of work has been done, so the work can be pushed through quickly whenever it is resumed.

**Central Union Station & Railway Co. of Cincinnati.**—This company has been organized to own and control the Union depot in Cincinnati which was built by the Cincinnati, Indianapolis, St. Louis & Chicago Co. The company will have \$600,000 common and \$600,000 preferred stock, the whole amount of the stock about covering the cost. The stock will be held in equal proportions by the Cincinnati, Indianapolis, St. Louis & Chicago, the Cleveland, Columbus, Cincinnati & Indianapolis and the Baltimore & Ohio companies.

**Chicago, Burlington & Kansas City.**—Work has been in progress for some time on the extension of this road southwest toward Kansas City. Track has been laid from the late terminus at Sumner, Mo., southwest to Grand River, four miles, and the grading is finished to Hale, some 20 miles further, with tracklaying in progress.

**Chicago, Burlington & Quincy.**—It is said that this company has completed arrangements for the use of the Chicago & Northwestern bridge over the Mississippi River at Clinton, Ia., and is negotiating for the purchase of extensive depot lands at Clinton. The object, it is supposed, is to make connection with the Burlington, Cedar Rapids & Northern branch which reaches Clinton and on the completion of which work is in progress.

**Chicago, Milwaukee & St. Paul.**—The last rail was laid on this company's new branch from Cedar Rapids, Ia., south by west through Sigourney to Ottumwa on June 28. The new branch is 90 miles long, and the section built this year is from Amara to Sigourney, 43 miles, track having been laid last year from Cedar Rapids to Amara, 21 miles, and from Sigourney to Ottumwa, 26 miles. The new branch carries the company into a section of Iowa south of any heretofore reached by its lines, and gives it access not only to several large and important towns, but also to a country rich in coal. Several mines have already been opened along the new line, and arrangements have been made to open others. Regular trains were put on the new line July 7, and through cars will be run between Chicago and Ottumwa, the distance being 321 miles, against 281 miles by the Chicago, Burlington & Quincy.

**Cincinnati, Washington & Baltimore.**—At a special meeting held in Cincinnati, July 16, the stockholders voted to ratify the contract for the sale of the old disused line from Canaan, O., to Moore's Junction, 30 miles, to the Marietta Mineral Railroad Co.; also a contract leasing to the same company the use of 4 miles of road, from Moore's Junction to Marietta.

**Denver & Rio Grande.**—In Denver, Col., July 14, the United States Circuit Court gave permission to Receiver Jackson to negotiate a loan of \$150,000 for the purpose of paying over due wages to the employees on the road.

This company's earnings for May and the five months ending May 31 were as below:

	1884.	1883.	Five months.	1884.	1883.
Earnings	\$568,754	\$628,018	\$2,450,715	\$2,892,426	
Expenses	422,663	408,558	2,075,187	1,752,705	
Net earn.	\$146,091	\$217,459	\$375,528	\$1,039,721	
P. c. of exps.	74.3	65.3	84.7	65.1	

For the five months there was a decrease in gross earnings of \$241,711, or 9.0 per cent., with an increase in expenses of \$322,482, or 18.4 per cent.; the result being a decrease of \$564,193, or 60.1 per cent., in net earnings. May shows a considerable improvement over the earlier months of this year.

**Detroit, Mackinac & Marquette.**—It is announced that work will shortly be begun on an extension of this company's Marquette & Western line from its present terminus at Ishpeming, Mich., westward to the Champion Mine, a distance of 15 miles. From this extension short branches and spurs will be built to reach all the principal iron mines in the district.

**East Tennessee, Virginia & Georgia.**—The revised statement of earnings and expenses for May and the eleven months of this company's fiscal year from July 1 to May 31 is as follows:

	1884.	1883.	1884-84.	1883-83.
Earnings	\$295,461	\$283,157	\$3,865,454	\$3,471,857
Expenses	195,700	181,435	2,254,496	2,202,493
Net earnings	\$99,761	\$101,722	\$1,610,958	\$1,269,358
Per cent. of expenses	66.1	64.1	58.3	63.4

For the eleven months the gross earnings show an increase of \$393,597, or 11.7 per cent. This was accompanied by an increase of \$51,997, or 2.4 per cent., in expenses, the result being a gain in net earnings of \$341,600, or 26.9 per cent. Nearly all of the net increase was made in the six months ending with December.

**Flint & Pere Marquette.**—The Mount Pleasant Branch of this road, which is of 3 ft. gauge, is shortly to be changed to standard gauge, and preparations are now being made for the change. The branch is 15 miles long.

**Georgia Marble Co.**—Surveys have been completed for a line to run from the Marietta & North Georgia road, in Pickens County, Ga., to the quarries of this company. The road will be of 3 ft. gauge and about seven miles long, and it will enable the company to ship its marble conveniently from the quarries, avoiding the heavy expense of teaming it to the railroad.

**Grand Trunk.**—The earnings of this road for the five months ending May 31 are reported in London as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Earnings	\$1,343,945	\$1,503,631	D. \$161,686	17.3
Expenses	1,004,466	1,109,130	D. 104,664	9.4
Net earnings	\$339,449	\$396,501	D. \$57,052	14.3
Per cent. of exps.	74.8	73.7	I. 1.1	....

The report of the two controlled lines west of Detroit for the same period of five months is as follows:

	—Chl. & Gd. Trunk—		—Det., G. H. & M.—	
	1884.	1883.	1884.	1883.
Earnings.....	\$258,094	\$239,233	\$95,027	\$118,223
Expenses.....	213,923	188,370	76,441	83,903
Net earnings....	\$44,171	\$50,863	\$18,586	\$34,320
Per cent. of exps.	82.6	78.8	80.5	77.7

The Chicago & Grand Trunk shows an increase in gross earnings of \$19,661, or 8.2 per cent., but a decrease in net earnings of \$5,892, or 11.6 per cent., the working expenses having increased largely. On the Detroit, Grand Haven & Milwaukee the gross earnings decreased \$13,196, or 12.2 per cent.; there was a smaller decrease in expenses, and net earnings show a decrease of \$5,734, or 23.8 per cent.

**Harper & Western.**—This company has filed articles of incorporation to build a railroad from Harper, Kan., westward to a point near Dodge City, with a branch from a point 15 miles west of Harper southwestward to the Indian Territory line, and thence westward parallel and close to that line for an indefinite distance. The company is organized in the interest of the Atchison, Topeka & Santa Fe, and the road will be an extension of that company's Southern Kansas line.

**Houston, East & West Texas.**—Several contracts for grading have been let for the section of 40 miles from Shreveport, La., to the Sabine River at Logansport. The contractors expect to begin work at once.

**Illinois Central.**—The following detailed statement of gross earnings for the six months ending June 30 is published, the June earnings estimated:

	1884.	1883.	Decrease.	P. c.
Illinois lines	\$2,882,650	\$3,035,516	\$152,866	5.0
Southern Division	1,909,503	1,934,150	24,647	1.3
Total line owned	\$4,792,153	\$4,969,666	\$177,513	3.6
Dub. & Sioux City	419,621	52,280	367,341	16.5
Iowa Falls & Sioux City	315,695	304,131	11,564	3.8
Cedar Falls & Minn.	60,431	64,116	3,685	6.1
Total leased lines	\$75,747	\$90,527	\$14,780	19.5
Total, all lines	\$5,587,900	\$5,900,193	\$312,293	5.3

The earnings of the Illinois lines this year were \$3,041 per mile; of the Southern Division, \$3,304; of the whole Iowa Division, \$1,979; the Dubuque & Sioux City showing an average of \$2,934, the Iowa Falls & Sioux City \$1,716, and the Cedar Falls & Minnesota \$806 per mile. The average for the whole system was \$2,898 per mile for the half-year.

**Intercolonial.**—A new passenger station is now being built in St. John, N. B., which is to be the finest station building in Canada. It is expected that there will be a large increase in the business at St. John when the bridge over the river at that point is completed, making close connections between the Intercolonial and the New Brunswick railroad.

The construction of the Dartmouth Branch at Halifax, N. S., is making good progress and the piers of the bridge over Halifax harbor at the Narrows are nearly completed. Contracts have been called for by the government for the construction of the Derby Branch in Northumberland County, N. B., which is over 14 miles long and is expected to bring considerable local business to the road. Contracts will also be shortly let for the Caraquet Branch, which will pass through a thickly settled and wooded district to Shippegan, and is expected to derive a large traffic from the fish trade of the Baie du Chaleur.

**Kentucky Central.**—Track is now all laid on the extension of this road to Livingston, Ky., the new terminus being 29 miles southward from Richmond Junction, and 150 miles from the Ohio River at Covington. The necessary sidings and connections are being put in at Livingston, and through trains will soon begin to run regularly. From Livingston to Jellico, 61 miles, the intention is to use the track of the Louisville & Nashville's Knoxville Branch, in order to make connection with the East Tennessee, Virginia & Georgia road, completing an outlet for that road to Cincinnati.

**Lake Shore & Michigan Southern.**—In Oil City, Pa., July 15, the Court refused to grant the injunction asked for by some of the stockholders of the Jamestown & Franklin Co. to prevent the renewal of the lease of the road to the Lake Shore Co. The reasons given by the Court are that the Lake Shore already holds a lease, and the injunction would therefore not affect the case until a final hearing; and also that the Jamestown & Franklin Co. has no equipment, and is not in a position to operate the road. This will not interfere with the hearing of the case on its merits.

**Lehigh Valley.**—The headings driven from the two ends of the Vosburg tunnel met July 14, and the work of enlarging the tunnel to its full size is progressing rapidly. The tunnel is 3,695 ft. long and is 21 ft. by 28 ft. in section; a double track will be laid through it. It forms part of a cut-off or short line which will reduce the length of the road 5½ miles, cutting off a section which has been difficult to maintain on account of its high grades and sharp curves.

**Little Rock & Fort Smith.**—Land sales so far this year have been good, and the receipts for land have been large. Since Jan. 1 the trustees have bought and cancelled \$25,000 bonds, with the funds paid over to them.

**Mahopac Falls.**—Notice is given that sealed proposals will be received at the office of H. M. Braem, Treasurer, No. 69 Wall street, New York, until noon of July 28, for the grading, masonry, bridging, fencing and tracklaying of this road from Baldwin Place, N. Y., on the New York City & Northern road, to the mines of the Mahopac Iron Ore Co., a distance of 4½ miles. Plans, profiles, etc., can be seen at the office of the Engineer at Mahopac Falls, or at the office in New York.

**Manchester & Fitchburg.**—The *Boston Advertiser* says: "The survey recently completed of the Manchester & Fitchburg Railroad follows the valleys of Baker, Stockwell and Lord Brooks from Fitchburg to West Townsend, and thence takes the discontinued road-bed of the Peterboro & Shirley road to the present location of that road. Half a mile west of Townsend Centre it leaves the Peterboro & Shirley Branch and extends to Brookline, thence to Milford, which it enters at South street, crossing under the Wilton road in that town near the East Milford station, thence



to Amherst, the station in that village being about 100 rods from the old court house. Thence the line runs northeasterly and passes along the northwest shore of Baboosic Lake and following nearly the boundary between Bedford and Merrimac. It strikes the Merrimac Valley about three miles below Manchester, following the river to that city. The maximum grade is 52.8 feet to the mile."

**Milwaukee, Lake Shore & Western.**—Track on the extension of this road is now laid to the Presque Isle River, 11 miles westward from the late terminus at Gogebic, Mich., and 321 miles from Milwaukee. The grading is done for some 10 miles west from the new terminus, and track-laying will be resumed as soon as the bridge over the river is in place.

This company recently filed for record a mortgage for \$3,000,000. It is made to the Central Trust Co., of New York, as trustee, and covers the road finished and to be built in Michigan, from Vieux Desert to Gogebic, and from Gogebic to the Montreal River and thence to Ashland, Wis., and also a proposed branch from Watersmeet to a connection with the Marquette & Western road.

**Minneapolis, Minnehaha & Fort Snelling.**—This company has been organized to build a short railroad from Minneapolis, Minn., by way of Minnehaha to Fort Snelling, a distance of about seven miles. The capital stock is \$500,000 and the limit of the bonded debt is fixed at the same amount.

**Minnesota, St. Croix & Wisconsin.**—This company, which is a consolidation of the St. Croix & Chippewa Falls Co. of Wisconsin and St. Paul and St. Croix Co. of Minnesota, has filed the necessary articles of incorporation in the two states, the capital stock being \$1,080,000. This company is completing the organized extension from Chippewa Falls to St. Paul, a distance of 108 miles. Work on the new line is being pushed rapidly and the grading has been completed for some 40 miles westward from Chippewa Falls. Tracklaying was recently begun. Grading is also in progress on the St. Paul end of the road.

**Missouri Pacific.**—In the United States Circuit Court in St. Louis, July 7, the case of the Pacific Railroad Co. of Missouri, against the Missouri Pacific Co., C. K. Garrison and others, was brought up. The decision of the United States Supreme Court, overruling the previous decision of the Circuit Court sustaining the demurrer filed by the defendant, was entered of record, and the respondents were given until Sept. 15 to plead in the new trial ordered by the Supreme Court. The counsel for the plaintiff agreed to take no further action against any of the defendants except to bring them into court at the appointed time.

**New York, Lake Erie & Western.**—Messrs. Powell and Westlake, two of the committee appointed by the English stockholders, arrived in New York July 15. The object of their visit is to investigate the condition of the road and also the financial condition of the company and its management. Mr. Powell was one of the reorganization trustees.

Mr. Westlake, one of the trustees, says that the investigation is to be conducted in an entirely friendly manner, its purpose being simply to find out the actual condition of the company and to see whether any assistance can be rendered by the English holders of securities. There was no idea of a reorganization or of instituting unfriendly proceedings, and, so far as he knew, there was no suspicion of anything wrong in the management. Such investigations were much more common in England than in this country, and did not excite any special attention there.

**New York, New Haven & Hartford.**—The temporary wooden bridge over the Housatonic River at Bridgeport, Conn., is completed, and work has been begun on the removal of the old bridge, which is to be replaced by a new iron structure. The temporary bridge includes a draw-span of considerable length.

**New York, West Shore & Buffalo.**—In New York, July 12, a suit was begun by the Central Trust Co. as trustee against the West Shore & Ontario Terminal Co., the New York, West Shore & Buffalo, and the New York, Ontario & Western, to foreclose the mortgage for \$10,000,000 given by the West Shore & Ontario Terminal Co. to secure an issue of bonds. The Terminal Co. owns the docks and terminal building at Weehawken, which are used by this company and the New York, Ontario & Western, and its stock is held by those two companies jointly. The trustee asks that the joint owners be compelled to pay interest in arrears on the terminal bonds or else that the property be sold under foreclosure and judgment given against the companies for any deficiency. The appointment of a receiver during the pendency of the action is asked for.

**Norfolk & Western.**—Work on the Cripple Creek Extension has been suspended and the laborers employed by the contractors have been discharged, some 1,500 men being thus thrown out of employment.

Officers of the company state that, before work was begun on the Cripple Creek Extension, it sold \$1,500,000 in improvement and extension bonds with which to pay for this and other new work. The syndicate which took these bonds also took an option on \$1,000,000 more which, if taken, will furnish sufficient means to complete the extension. The company has determined that no work should be done beyond what was provided for in cash by the sale of these bonds. Owing to the present depression the option on \$1,000,000 bonds was not taken and the company has stopped work until those bonds should be placed. The contractors have been promptly paid, and the company has met all its obligations in full and is provided with funds to meet all claims as they become due.

**Oregon Railway & Navigation Co.**—President Smith says that the directors of this company and the Northern Pacific have finally decided to lease the property of the Oregon Co. to the Northern Pacific on the basis of 6 per cent. of the stock for two years, 7 per cent. for the three years following, and 8 per cent. thereafter. President Harris of the Northern Pacific is now making inspection of the property and the lease will be signed on his return.

**Oregon & Transcontinental.**—The Boston Herald says of this company: "The next loan due is the Gould loan of \$1,200,000, which matures early in August. The present management, it is said, has had to pay one commission only on its loans, and has not been charged over 6 per cent. interest. By the settlement with the Oregon & California Co., Oregon & Transcontinental's \$8,000,000 loan is reduced to 6 per cent. The Oregon & California second mortgage bonds were pledged to secure the 5 per cent. commission on this loan, and by the terms of the settlement the Oregon & California Co. take the bonds and become responsible for the commission, \$400,000. Of course Oregon & Transcontinental sacrificed what it had expended on the Oregon & California, some \$1,500,000. Oregon & Transcontinental is in comparatively comfortable circumstances—that is, when compared with the past. The interest on its floating debt of \$11,000,000 is provided for from the 6 per cent. dividends on its \$14,000,000 Oregon Railway & Navigation stock, which dividends will be guaranteed by the Northern Pacific agreement."

**Ottumwa, Cedar Falls & St. Paul.**—This company is now building a road from Belle Plain, Ia., on the Chicago & Northwestern road, southward to some of the coal fields of the state. The terminus of the road has not yet been made public. The grading is finished for 15 miles and rails have been laid from Belle Plain southward to the crossing of the Rock Island road 2½ miles west of Victor, a distance of 13 miles. Work is in progress on the grading to the mines at What Cheer, 35 miles from Belle Plain, and the company expects to have the rails laid to that point early in August.

**Pennsylvania Company.**—A report that this company had ordered a reduction of 10 per cent. in the wages of the employees of all its lines, to take effect Aug. 1, is contradicted by officers of the company, who say that no such order has been issued and they have not understood that there is any intention of issuing it.

**Portland & Ogdensburg.**—In the Supreme Court in Portland, Me., July 15, the Union Mutual Life Insurance Co. and other holders of first-mortgage bonds filed a petition asking that the Receiver be directed to pay the coupons which became due July 1. Another petition was also filed by the First National Bank of Portland, asking for the payment of the January coupons. The hearing on these petitions was set for the first Tuesday in September.

**Pittsburgh & Western.**—In the Court of Common Pleas in Pittsburgh, July 12, a decision was given in the case of Lusk and others against this company, Callery and others. The case has been pending for some time and involves the legality of the sale of the Pittsburgh New Castle & Lake Erie road and the subsequent reorganization of that company as the Pittsburgh & Western. The bill filed by plaintiffs alleged that the sale was fraudulent owing to the collusion of the officers of the company. The master appointed in the case filed a report in favor of the plaintiffs, but exceptions were taken, and the decision of the Court was on these exceptions. After noticing the claims of the plaintiffs the Court decides that at the time the sale was ordered the credit of the company was gone and the earnings of the road were not sufficient to pay the running expenses and fixed charges, and the only course left open for the management was a call upon the stockholders for an assessment or to allow the property to be sold, and to reorganize in the interest of those who were willing to make further advances on the stock. The directors seem to have adopted the only practicable method by allowing the road to be sold under judgments which had then been secured. It also appears from the testimony in the case that the old stockholders were not only permitted, but were asked to join in the reorganization and to come into the company. The Court says that the only difficulty seems to have arisen from the fact that the plaintiffs wanted to retain their stock without paying anything toward the assessments required by the reorganization. The decision is, in short, that the allegations of fraud and collusion in the sale of the property are not proved, and the plaintiffs have failed to make out a case which entitles them to any relief. The Court, therefore, sustains the exceptions to the master's report and the bill filed in the case is dismissed, with costs to the plaintiffs.

**Sea Isle & Ocean City.**—Grading is now about completed on this road, which runs from the Sea Isle Branch of the West Jersey road at Sea Isle, N. J., northward along Peck's Beach and Ludlum's Beach to Ocean City, a distance of 12 miles. Track is laid from Sea Isle north 7 miles, and it is expected that the road will be finished by August. It runs close to the sea shore for the whole distance, and will probably hereafter form part of the line which will run down the New Jersey coast from Long Branch to Cape May.

**Shenandoah Valley.**—This company's statement for May and the five months ending May 31 is as follows:

	—May, 1883.	—Five months, 1883.	—Five months, 1884.
Earnings.....	\$61,399	\$72,447	\$294,163
Expenses.....	55,201	53,522	264,042
Net earnings.....	\$6,198	\$18,925	\$30,121
Per cent. of exps.....	89.9	74.0	89.8

For the five months the gross earnings increased \$7,913, or 2.8 per cent., and the expenses \$3,516, or 1.4 per cent., leaving a gain of \$4,397, or 17.1 per cent., in net earnings. The mileage worked was the same in both years.

**Shenango & Allegheny.**—In Pittsburgh, July 16, the United States Circuit Court granted an order restraining W. W. Read from interfering with the Receiver in his control of this road, especially in relation to the West Penn & Shenango Connecting road. Mr. Read recently obtained a judgment for \$68,000 against the West Penn & Shenango Connecting road, and seeks to have that road sold under the judgment. The injunction now granted will prevent the sale.

**South Florida.**—A new branch of this road has been graded from Bartow Junction in Polk County, Fla., southward to Bartow, a distance of 18 miles. Tracklaying has been begun. It is expected that this branch will hereafter be extended from Bartow southward to Charlotte Harbor.

**Spartanburg, Union & Columbia.**—Default was made on the interest due July 10 on the \$1,000,000 bonds of this company, which are principally held in New York. The bonds bear 5 per cent. interest, having been issued when the road was sold under foreclosure and the company reorganized in 1880. The road extends from Spartanburg, S. C., to Alston, 68 miles, and has been leased to the Columbia & Greenville Co. at a rental of \$50,000 per year. The default is caused by the fact that the lessee company has refused to pay the rent on the ground that the legality of the lease is doubtful and that the action of the South Carolina Railroad Commission in reducing the rates has rendered it impossible for the road to earn its operating expenses, to say nothing of the rental. The question as to the legality of the lease will probably be settled by a suit which, it is said, will be brought at once. The Columbia & Greenville Co. is controlled by the Richmond & West Point Terminal Co., but the officers of that company state that default on the rental is a matter which concerns the Columbia & Greenville Co. alone and does not affect the Terminal Co. or its other properties, as it does not lease the road or guarantee any of its obligations, standing toward it in the position of a stockholder only.

**Suffolk & Chowan.**—It is said that work is soon to begin on this road, which is to run from the Seaboard & Roanoke road at Suffolk, Va., southward to Sunbury in Gates County, N. C., and thence southwest to the Chowan River, a distance of about 49 miles in all.

**Toledo, Cincinnati & St. Louis.**—The Quigley or Boston committee now claim to hold more than a majority of the St. Louis Division bonds deposited in favor of their plan for reorganization, and this committee is making arrangements to push the foreclosure proceedings. What action the Corbin committee will take is not certain, although it is intimated that they will try to purchase the road at the foreclosure sale.

In behalf of the bondholders an appeal has been taken from the award of the master made for the use of equipment in service on the road, the amount of rental fixed being considered excessive.

The United States Circuit Court in Cincinnati, July 15, confirmed the sales of the Dayton Division, the Southeastern Division and the Cincinnati Division, recently made. All the sales are confirmed subject, of course, to the payments provided for by the terms of the sale.

**Union Pacific.**—The Executive Committee of this company has decided to transfer the executive offices to Boston. The New York office will be kept open merely for the purpose of registering and transferring stock.

On the Oregon Short Line work is now progressing on the bridge across the Snake River as fast as the weather will permit. The distance from the bridge to Huntington, Ore., which is to be the point of junction with the Oregon Railway & Navigation Co.'s line, is about 4½ miles. Work upon the bridge and upon this short section of track will probably be completed before the Oregon line is ready, but it is not thought that the junction will be made before November. A line has finally been located for the branch from the Short Line to Boise, Idaho, and work has been begun on the grading between Caldwell on the main line and Boise City, a distance of about 40 miles. It is thought possible that this branch may hereafter be made part of the main line passing beyond Boise and around up the Boise River divide back to the main line, in which case a part of the present main line will be abandoned.

**Union Railway of Chattanooga.**—This company has now in operation about five miles of track and is building four miles more, which will form a belt railroad entirely around the city of Chattanooga, Tenn., connecting the six lines of railroad entering the city. The company has been operating the five miles of track for some months and connecting with almost all the large manufactories and all the railroads. It has in use two heavy engines made by the Baldwin Locomotive Works. The business has increased from the first opening of the track, the peculiar location of Chattanooga making a belt railroad almost a necessity, and the stockholders expect that the road will be a good investment. The line runs along the bank of the Tennessee River for three miles, connecting with two wharves where shipments from the river are received directly from the boats in the cars. Grain, coal, iron ore and lumber shipments down the Tennessee River are large and are now all handled by this road. There are now in operation in Chattanooga two blast furnaces, three rolling mills, a nail mill, and other large factories, most of which are already connected with this road, and the rest will have connections when the road is completed. The railroads entering the city all exchange business with the Union road, which is now transferring nearly all the cars between the different roads and the factories. The company has purchased all the rails necessary to build the rest of its line and has them now in Chattanooga, and the work will be rapidly finished up. The company also expects to buy two more locomotives for early delivery. In addition to the advantages obtained by the railroads and factories already in the city the new line renders available for manufacturing purposes a great deal of property lying around the city which could not heretofore be used to advantage owing to the distance from the railroads. It has also been of benefit to the city, by taking transfer switching outside the busy part of the town. The capital stock of the company is \$200,000.

**Vicksburg, Shreveport & Pacific.**—The railroad bridge across the Red River at Shreveport, La., is completed, except the painting and finishing of the floor. The bridge, beginning at the Shreveport side, has one deck span 80 ft. long, then two through spans each 263 ft. long, a draw span 300 ft. long, and on the east side another deck span 80 ft. long. Besides the railroad track the bridge has a highway or wagon road and a walk for foot passengers. Work upon it has been in progress for nearly a year, the foundations requiring some difficult work, the progress of which was frequently interrupted by high water. Col. C. Shaler Smith, of St. Louis, is contractor for the bridge, the foundation and masonry being sub-let to Peter Scully and the iron for the bridge being furnished by the Edgemoor Iron Works.

**Virginia & Carolina.**—The Richmond (Va.) State says: "Petersburg is trying very hard to induce the Virginia & Carolina Railroad Co. to build its line via that city. During the depression in Wall street the progress on the work of construction will not be rapid, but when financial matters look up the work will be pushed rapidly. A good deal has already been done in the way of grading, and under favorable conditions the road could be finished in six months. The distance between the termini—Ridgeway, N. C., and Richmond—is only 96 miles. At Ridgeway the new road taps the Seaboard & Roanoke, making the distance from Richmond to Raleigh by the new route only 140 miles. The business men of Richmond are much interested in the Virginia & Carolina, as it not only gives them a new southern system, but it opens up a fine agricultural section of Virginia—the counties of Mecklenburg, Brunswick, Dinwiddie and Chesterfield. If the road comes to this city without touching at Petersburg much of the trade now tributary to our sister city will be diverted to Richmond."

The Petersburg people offer a subscription of \$100,000 to secure the defection of the line to their city. Such a change will involve a considerable extra expense in the building of the road.

**Warrior Coal Fields.**—At a recent meeting of the directors of this road, arrangements were made to secure a title to the old graded road-bed of the Mississippi, Gainesville & Tuscaloosa road, running from Narketa, Miss., to Gainesville, Ala., 20 miles. This road was formerly operated by the Mobile & Ohio, but was abandoned and the track taken up several years ago. The Warrior Coal Fields road is intended to run from Meridian, Miss., to Decatur, Ala., a distance of 210 miles, a considerable part of the distance being through the coal fields along the Black Warrior River.

**Western North Carolina.**—Track on this road is now laid to the crossing of the Tuckaseegee River, near Corvey, 8 miles beyond the late terminus at Balsam Mountain Gap and 17 miles from Waynesville. The road is now on the descending grade beyond the Balsam Mountain, which is the highest point on the line. The track on the mountain grades is being laid with 60-lb. steel rails. The grading is finished to the mouth of Nantahala, a little over 40 miles from Waynesville, and the track is expected to reach that point in August.

**West Virginia & Ohio.**—This company has been organized to build a railroad from Pocahontas, Va., the terminus of the New River Branch of the Norfolk & Western road, westward across West Virginia to the Ohio River at the mouth of the Big Sandy. The incorporators are Henry M. Hoyt, B. K. Jamison, John W. Jones, George Biddle and Thomas Graham, all of Philadelphia.

**Wilmington & Weldon.**—A survey has been ordered for a branch from this road at War-aw, N. C., westward to Clinton, in Sampson County. Some local aid has been promised for the construction of this branch, which will be about 20 miles long.